DOCUMENT RESUME

ED 480 285 EA 032 739

AUTHOR	Nzomo, Juliana; Kariuki, Mary; Guantai, Lilian
TITLE	The Quality of Education: Some Policy Suggestions Based on a Survey of Schools--Kenya. SACMEQ Policy Research Report.
INSTITUTION	United Nations Educational, Scientific, and Cultural Organization, Paris (France). International Inst. for Educational Planning.
REPORT NO	SACMEQ-RR-6
PUB DATE	2001-00-00
NOTE	97p.; Kenneth N. Ross, Series Editor. For other reports in this series, see EA 032 734-740.
AVAILABLE FROM	United Nations Educational, Scientific, and Cultural Organization, International Inst. for Educational Planning, 7-9 rue Eugene-Delacroix, 75116 Paris, France. E-mail: information@iiep.unesco.org; Web site: http://www.unesco.org/iiep. For full text: http://unesdoc.unesco.org/ images/0012/001235/123540e.pdf.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Administrator Qualifications; Educational Assessment; Educational Environment; Educational Equity (Finance); Educational Facilities; Educational Planning; *Educational Quality; Elementary Education; Evaluation; Foreign Countries; *Grade 6; *Reading Achievement; School Surveys; Scores; Student Characteristics; Teacher Qualifications; Tests
IDENTIFIERS	*Kenya

ABSTRACT

The Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) is a consortium of ministries of education in southern Africa. This bound report--one of seven--presents the research results and policy suggestions that emerged from implementation of SACMEQ's initial educational policy research project. The report looks broadly at five areas of policy concern: (1) baseline data for selected inputs to primary schools; (2) how conditions of primary schooling compare with the Ministry of Education's benchmark standards; (3) whether educational inputs to primary schools have been allocated in an adequate fashion among and within education districts; (4) the level of reading achievement for Grade 6 students; and (5) which educational inputs to primary schools have had the strongest effect on the reading achievement of Grade 6 students. Data for the study were gathered from a student test of basic reading literacy and student, teacher, and principal questionnaires. This report specifically focuses on reading achievement in the nation of Kenya. Along with reading test scores, the report presents information on the characteristics of Grade 6 students and teachers; student access to materials; conditions of school rooms and buildings; and other information on the state of education in Kenya. (Contains 11 references and 33 tables.) (WFA)

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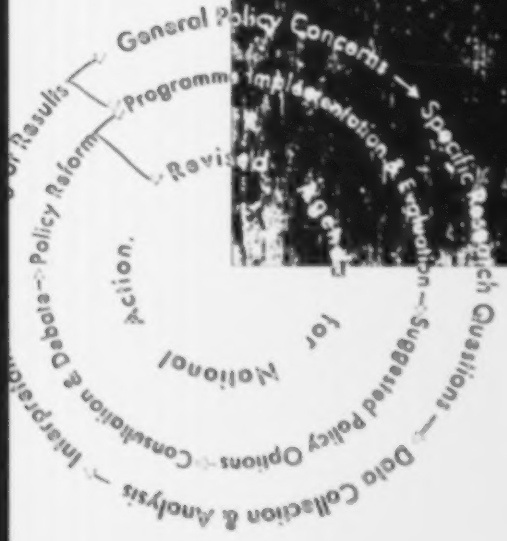
SACMEQ Policy Research: Report No. 6

Series Editor: Kenneth N. Ross

ED 480 285

The quality of education: some policy suggestions based on a survey of schools


General Policy Concerns → Specific Research Questions → Data Collection & Analysis → Interpretation of Results
Programme Implementation & Evaluation → Suggested Policy Options → Consultation & Debate → Policy Reform
Revised Agenda for National Action.

Kenya

by
Juliana Nzomo
Mary Kariuki
Lilian Guantai

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UNESCO
International Institute
for Educational Planning

SACMEQ Educational Policy Research Series: Report No. 6
Series Editor: Kenneth N. Ross

The quality of primary education: some policy suggestions based on a survey of schools

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Kenya

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by

Juliana Nzomo
Ministry of Education, Science and Technology

Mary Kariuki
Action AID, Kenya

Lilian Guantai
Ministry of Education, Science and Technology

International Institute for
Educational Planning,
UNESCO

Ministry of Education,
Science and Technology,
Kenya

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Published by the International Institute for Educational Planning
7-9 rue Eugène-Delacroix, 75116 Paris, France
information@iiep.unesco.org
www.unesco.org/iiep

Cover design by Marie Moncet. Woodcut by Hélène Déry.

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Foreword

The Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) is a consortium of Ministries of Education located in the Southern Africa sub-region. For several years these Ministries have worked in close partnership with the IIEP in order to undertake educational policy research with the main aim of generating reliable information that can be used by decision-makers to plan the quality of education.

In January 1997 the Government of Zimbabwe officially registered SACMEQ as an international non-governmental organization. SACMEQ's Sub-regional Co-ordinating Centre is located within UNESCO's Harare Office. The work of the Centre is managed by a Director and is guided by a Committee chaired by Zimbabwe's Minister of Education. The 'founding members' of SACMEQ are the IIEP, Kenya, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Tanzania (Mainland and Zanzibar), Zambia, and Zimbabwe.

SACMEQ's programme of research and training has four features which have optimized its contributions to the field of educational planning in Africa: it provides research-based policy advice concerning issues that have been identified by key decision-makers, it functions as a co-operative venture based on a strong network of educational planners, it combines research and training components that are linked with institutional capacity building, and its future directions are defined by the participating Ministries.

SACMEQ's initial educational policy research project was assisted during 1994/1995 through a Funds-in-Trust (FIT) agreement between the Italian Government and UNESCO. In 1996 SACMEQ's sub-regional activities were financed under an FIT agreement with the Netherlands Government. This arrangement was renewed in 1997 for the launch of SACMEQ's Sub-regional Co-ordinating Centre.

The costs associated with future SACMEQ projects will be financed from two sources. First, the SACMEQ Sub-regional Co-ordinating Centre will support co-operative sub-regional activities which include project design, sub-regional training workshops, construction of data archives, and dissemination of results. Second, the participating Ministries will cover their own within-country research costs related to printing, fieldwork operations, data entry and cleaning, the provision of general overheads for project co-ordination, and the publication of national reports.

This report presents the research results and policy suggestions that emerged from the implementation of SACMEQ's initial educational policy research project. It is offered to other educational planners – not as a final evaluative comment, but rather as a stimulus for constructive discussion of educational policy options, and also as a successful model of productive collaboration among educational planners from many different countries.

Hon. Mr Stephen K. Musyoka
Minister of Education, Science and Technology
Nairobi, Kenya

Gudmund Hernes
Director, IIEP
Paris, France

Further information

For further information about SACMEQ and its policy research programme, please contact:

The Director
SACMEQ
UNESCO Regional Office
8 Kenilworth Road
Harare
Zimbabwe

Telephone: (263-4) 776 114-5, 776 775, 746 231, 786 598
Fax: (263-4) 776 055

For further information about the IIEP's programme of co-operation with SACMEQ, please contact:

Kenneth N. Ross
International Institute for Educational Planning
7-9 rue Eugène-Delacroix
75116 Paris
France

Telephone: (33-1) 45 03 77 19
Fax: (33-1) 40 72 83 66
E-mail: k.ross@iiep.unesco.org

Acknowledgements

SACMEQ's initial educational policy research project was a co-operative cross-national initiative focused on shared policy concerns that were related to planning the quality of primary education in the Southern Africa sub-region. Each national educational policy report prepared for this project therefore represents a 'team effort' that has been made possible through the hard work of many people.

The International Institute for Educational Planning and the SACMEQ network of Ministries of Education would like to thank everyone involved in the successful implementation of this important project and, in particular, to acknowledge the contributions made to this report by the following people.

Kenya
Juliana Nzomo, Mary Kariuki, Lilian Guantai

Malawi
Grace Milner, Joseph Chimombo, Thokozire Banda, Clive Mchikoma

Mauritius
Dhurumbeer Kulpoo

Namibia
Demus Makuwa, Friedhelm Voigts, Thea Seefeldt

Tanzania (Zanzibar)
Sebtuu Nassor, Khadija A. Mohd Mbarak

Zambia
Joe Kanyika

Zimbabwe
Thomas Machingaidze, Patrick Pfukani, Sibangani Shumba

IIEP
Kenneth N. Ross, T. Neville Postlethwaite, Mioko Saito
Stephanie Leite, Jocelyne Vellien, Patrick Griffin

Contents

Foreword
Acknowledgements

Chapter 1 The setting for the study 1

Introduction 1
The regions in Kenya 1
School education in Kenya 2
A response to the policy concerns 6
The five main policy-related questions for SACMEQ's initial project 7

Chapter 2 The conduct of the study 8

Introduction 8
Co-operation with SACMEQ 8
Instrument development 9
Sampling 11
Calculation of sampling errors 14
Data collection 18
Data entry, cleaning and analysis 19
Conclusion 20

Chapter 3 What are the baseline data for selected educational inputs to primary schools in Kenya? 21

Introduction 21
A note on the interpretation of the data analyses 21
Specific policy questions related to educational inputs 22
What were the characteristics of Standard 6 pupils? 22
What were the characteristics of Standard 6 teachers? 30
What were the teaching conditions in primary schools? 32
What aspects of the teaching function designed to improve the quality of education were in place? 36
What was the general condition of school buildings? 42
What level of access did pupils have to books? 45
Conclusion 47

Chapter 4 How do the conditions of schooling in Kenya compare with the Ministry's own benchmark standards? 48

Introduction 48
Basic organizational features of schooling 49
Classroom furniture and supplies 52
Academic and professional qualifications of teachers and school heads 54
Conclusion 56

Chapter 5 Have educational inputs to primary schools been allocated in an equitable fashion? 57

Introduction 57
Two approaches to the measurement of quality 57
Equity calculations for material resource inputs 59
Equity calculations for human resource inputs 61
Conclusion 62

Chapter 6 What is the level of reading literacy for Standard 6 pupils overall and in the three domains of reading literacy? 63

Introduction 63
The structure of the reading test 63
The construction of six reading test scores 64
Analysis of mastery levels 65
Analysis of mastery levels for sub-groups 68
Analysis of narrative, expository, and document sub-scales 69
Conclusion 72

Chapter 7 An Agenda for Action 73

Introduction 73
Classification of policy suggestions 74
A four-stage Agenda for Action by the Ministry 75
Co-ordination of Ministry responses to the Agenda for Action 84
The future 84

References 85

Chapter 1

The setting for the study

Introduction

Kenya lies on the East Coast of Africa, with the equator nearly dividing it in half. It is bordered by Somalia to the East, by the Indian Ocean to the South-East, by Tanzania to the South, by Uganda to the West, by Sudan to the North-West, and by Ethiopia to the North-East. Its surface area is 582,366 square kilometres. Its population, with an annual growth rate of about 3 percent, is estimated to be about 30 million. Around 97 percent of the population are constituted from 40 indigenous communities, each with its own mother tongue. Three percent of the population consists of descendants of immigrants from Asia, Europe, and elsewhere. English is the official language and the medium of instruction from Standard 4 of primary school, while the language of the school catchment area is used for instruction in the first three grades. Kiswahili, a hybrid of predominantly Bantu languages with some words from other languages (especially Arabic), is the *lingua franca*, and is a compulsory subject in primary and secondary schools. Christianity is the religion of the majority, but about a third of the population is Muslim. Other religions, including traditional African worship and Hindu, are practised by small proportions of the population. Kenya became independent in 1963, and became a Republic in 1964.

The regions in Kenya

There are eight administrative regions in Kenya, known as Provinces. These are Coast, Central, Eastern, Nairobi, Rift Valley, Western, Nyanza, and North Eastern. The data in later chapters are reported according to these regions. Within regions there are District Education Offices but a major responsibility for education lies with the Regional Offices. Some background information is presented on each region.

Coast Province: This province has seven districts, 1,079 primary schools, and 362,593 pupils (45.4 percent female). The majority of the inhabitants in Coast Province are Muslims. Mombasa, the Provincial capital, is the second largest city after Nairobi.

Central Province: This province has seven districts, 1,801 primary schools, and 894,583 pupils (50.1 percent female). It is a high potential, densely populated province. The province has a high rainfall throughout the year and is well endowed with cash crops such as tea and coffee.

Eastern Province: This province has 12 districts, 4,078 primary schools, and 1,110,164 pupils (50.5 percent female). The province cuts across the country from North to South, and exhibits geographical, social, economic and cultural diversity. Three districts (Isiolo, Marsabit and Moyale) have very low rainfall and limited agriculture. There are substantial variations in educational quality among districts.

Nairobi Province: Nairobi is the capital city of Kenya, and is not divided into districts. It has 248 primary schools and 155,834 pupils (49.8 percent female). Educational standards in

Nairobi are diverse, with pockets of schools in slum areas that contrast markedly with the high standards of education in schools in the city centre and the outskirts of the city.

Rift Valley Province: This is the biggest province in Kenya with 17 districts, 4,482 primary schools and 1,400,759 pupils (49 percent female). The province also exhibits geographical, social, economic, and cultural diversity. Nomadic pastoralists inhabit some districts in the arid area, while other more fertile districts have varied crops of tea, coffee, maize and wheat.

Western Province: This province has seven districts, 1,909 primary schools and 850,951 pupils (50.6 percent female). With one main ethnic group, the province does not display a great deal of diversity. Sugar cane is the main cash crop. This province borders Uganda, and economic activity along the border has affected boys' education due to widespread child labour practices.

Nyanza Province: This province has 10 districts, 3,588 schools and 1,100,144 pupils (49 percent female). The province has three main ethnic groups, the Luos, Kisiis and Kurias. The province, which is a lake region, borders Tanzania, and has fishing, sugar cane, and tea growing in some parts as the main economic activities. Nyanza is highly affected by occasional floods, as well as HIV/AIDS. The death rate as a result of HIV/AIDS is particularly high, leaving many children as orphans. This, coupled with the cultural practices by some ethnic groups of early marriages, affects learning in the region.

North Eastern Province: This province has three districts, 171 schools, and 44,693 pupils (32 percent female). The whole of North Eastern is arid. Its inhabitants are mainly Muslim, and it borders Somalia. The province is deeply entrenched in its culture, which provides only limited support for girls' education. Girls are generally married at an early age and therefore have low participation rates in the latter years of schooling. Due to the nomadic nature of the pastoralist community, the Ministry has introduced mobile schools in the region in an effort to provide greater access to education.

School education in Kenya

In 1984 the government introduced an 8-4-4 structure of education, which replaced the previous 7-4-2-3 system. The new system features a broadly-based practical curriculum at all levels, and consists of eight years of primary education, four years of secondary education, and four years of tertiary education.

a) Pre-primary education

In 1998, there were 23,977 pre-primary centres in the country, with an enrolment of 1,076,606 children, which represented a gross enrolment rate of 34.9 percent. Religious groups or private organizations run most pre-primary schools, while others are run by local authorities. With the increase in women participating in salaried employment and taking responsibility as breadwinners, there is an increased demand for pre-primary education. Currently the Kenyan Government, through a World Bank-funded project, is investing heavily in this area and it is expected that there will be an increase in access to pre-primary education which is likely to raise the gross enrolment ratio from the current 35 percent to 50 percent by 2005.

b) Primary education

The official age range for primary schools is 6-13 years. In 1998 there were an estimated 5.9 million children enrolled in about 17,000 primary schools. About 1 percent of the children are enrolled in private schools. The official primary school week is five days and the school day is officially expected to be six hours. The school year is divided into three terms, starting in January and ending at the end of November. There are 180 school days in a school year. However, in practice, children attend school for more days than officially required, especially those in upper primary (Standards 6 to 8) who go to school on Saturdays and also during school holidays.

The attainment of universal primary education has been a long-term objective in the primary education sub-sector since independence (1963). This was further reinforced by the Jomtien declaration of Basic Education for All in 1990, for which Kenya was a signatory. However, the goal of attaining Universal Primary Education by the year 2000 has remained a dream and the government has revised the time-frame for achievement of the goal to the year 2015. In order for the dream to become a reality, several issues being addressed include reduction of the cost burden for parents, allowing re-entry to school for girls who are forced out due to pregnancies, revision of the curriculum to make it more relevant and manageable – especially in terms of workload – applying alternative approaches to school operations, such as multi-shift and multi-grade, and giving greater recognition to non-formal education. The government also plans to create flexibility in the system, such that children in the non-formal system who wish to join the formal system can do so, and vice versa.

Gross enrolment ratios have declined from 105.4 percent in 1989 to 88.4 percent in 1998. However, the figures at national level do not reveal the situation at provincial and district levels, where disparities exist. In *Table 1.1*, the gross enrolment ratios by province have been presented. Although gross enrolment ratios have gradually declined over the years in all provinces, the North Eastern Province has had the lowest enrolment ratios. The inhabitants of this province are Pastoralists who are deeply entrenched in their culture.

Studies have indicated that the decline in enrolment rates can, *inter alia*, be attributed to the high cost of education amidst high levels of poverty and the harsh economic situation, and to the overloaded curriculum which, in some areas (for example, pastoralist/nomadic areas), is not relevant. The financing of education in Kenya is based on a cost-sharing partnership among the government, parents, and communities. The parents and communities meet the costs of capital development and some of the recurrent costs such as teaching-learning materials, school uniforms, and examination fees. The government caters for teacher remuneration, supervision, and management.

Table 1.1. Gross enrolment ratios by province for the years 1989 to 1998

Province	Year									
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Coast	78.8	78.2	75.8	74.3	69.4	64.5	64.7	65.2	63.3	73.3
Central	105.4	99.3	96.4	95.2	92.3	88.5	89.7	83.1	80.9	98.2
Eastern	94.9	93.6	92.7	90.1	84.8	82.5	79.0	77.9	76.7	93.8
Nairobi	86.4	68.0	67.1	66.0	51.3	62.1	61.4	58.5	56.0	56.9
Rift Valley	89.5	87.9	86.5	84.4	76.7	77.4	75.8	75.6	75.9	86.7
Western	103.5	101.3	98.8	98.1	93.2	92.4	89.8	87.8	86.8	103.4
Nyanza	101.6	97.7	94.5	98.1	94.3	93.7	83.4	81.0	83.3	92.9
North Eastern	30.0	32.4	30.8	29.4	22.1	28.6	19.7	27.2	31.7	24.8

Source: *Ministry of Education, Statistics Section.*

In 1998, the primary school completion rate was estimated to be 47.2 percent – up slightly from a figure of 43 percent in 1989. The fact that completion rates have not yet exceeded 50 percent is a matter of great concern, and is a reflection of internal inefficiencies within the system. High rates of repetition and drop-out can be attributed to factors such as the inability of households to meet the cost of education, girls' pregnancies, and limited opportunities for access to secondary education, which results in stiff competition for the few places available. Gender disparities in completion rates were gradually reduced from 7.8 percent in 1989 to 0.5 percent in 1998.

There is a teaching force of 192,306 teachers at the primary-school level, and the national teacher/pupil ratio was 1:31 in 1998. The staffing norm at this level is one teacher per class plus 2.5 percent, while the norm for the teacher/pupil ratio is 1:50. Disparities between the norm and the actual have led the government to take measures to correct the situation. Since 1997, the government has stopped training primary-school teachers in public teacher training colleges. The major challenge facing the government is balancing the staffing ratio of teachers by re-deploying teachers from those regions which are over-staffed to those that are under-staffed. This is a difficult task because teachers from certain ethnic groups would never be accepted in some areas, and re-deploying them to such areas might actually present a security risk. Teacher re-deployment is therefore not always an appropriate approach for correcting these imbalances. This has led the government to review the policy of teacher training, such that the training of teachers will be demand driven, as opposed to the previous practice of simply recruiting teacher trainees to fill the 22 public teacher training colleges and then providing them with guaranteed employment. Commencing in 1999, the government has been recruiting teacher trainees from those areas where there is need for teachers, in order to post them to their home areas.

c) Secondary education

Transition rates from primary to secondary school over the past decade have ranged from 42 percent to 47 percent. In 1998, there were around 3,081 secondary schools with a total enrolment of 700,538 students. This represents a gross enrolment of about 23.2 percent, a decline from 30 percent in 1989. The teaching force in this sub-sector is 43,694 and the teacher/pupil ratio is 1:16 at the national level. The staffing norm at this level is curriculum based.

d) Financing of education

Estimated expenditure on education increased by 9.7 percent in the 1998/99 financial year. The allocation for teachers' salaries continued to take the largest share of recurrent expenditure. It gradually increased from 79.5 percent in 1996/97 to 84.2 percent in 1998/99. Higher education is the second highest consumer of recurrent expenditure, taking 11 percent of the total. Overall, recurrent expenditure estimates account for 95.5 percent of the total budget in the Ministry, leaving only 4.5 percent of the total allocation for development activities.

It should be noted that the government's major contribution, at this level, is towards the payment of teacher salaries. On the other hand it is the parents who finance capital investments and recurrent expenditure in terms of the provision of physical facilities, repair and maintenance, provision of teaching/learning materials and stationery, uniforms, tests and examinations, and salaries for non-teaching staff and other related costs.

e) Education reforms

In the 1990s, the Kenyan Government became very concerned about declining enrolments at both primary and secondary levels of education and low participation rates. In 1994, the Ministry of Education, in collaboration with other ministries involved in the sector, carried out a Comprehensive Education Sector Analysis (CESA). The findings of this report confirmed a steady decline in enrolment levels and retention rates. In addition, the report noted that there was no access to learning for children in disadvantaged rural areas, and in the slum areas in towns. The cost of education was also becoming unaffordable to an increasing number of households and therefore the issues of equity and quality of education were becoming areas of major concern.

In 1995, a study (comprising seven sector-specific and related studies) on 'Costs and Financing of Education' was carried out, the findings of which were used to prepare a National Master Plan on Education and Training (MPET). The MPET addressed five challenges facing the development of education in Kenya:

(i) a mismatch between formal learning in institutions and economic opportunities in society;

(ii) inadequate national co-ordination of education and training;

(iii) pressure on the public budget allocation to the sector;

(iv) increasing user costs; and

(v) decline in school enrolment rates and quality.

In order to address these challenges, the major thrust was to develop feasible objectives, policies, strategies, programmes, and activities to guide development of the sector in the early years of the twenty-first century. It was indicated that efficiency and effectiveness in the provision of education and training would be the key to evolving sustainable development in the sector. The strategies proposed by the MPET, for the primary education sub-sector were:

(a) to increase access and participation;

(b) to raise relevance and quality; and

(c) to improve resource mobilization, allocation, and accountability.

At the beginning of 1998, the government established a Commission of Enquiry into Education, to review the 8-4-4 education system in terms of quality and relevance, and to bring forward recommendations on how best the system could be improved. The results of this enquiry were used to chart new directions in the year 2000.

f) Resulting policy concerns

The MPET recognized that in the past, policy formulation depended too much on anecdotal evidence and intuition, and that there was a growing need for decision-making that was based on an informed analysis of the conditions of education. One of the recommendations in this document was the establishment of a separate national monitoring system and the strengthening of research and development within the Ministry of Education. A further recommendation was the establishment of a national assessment system, based on the application of scientific survey sampling procedures.

It was also recognized that there was a need to (i) improve efficiency and effectiveness with respect to the provision and delivery of education, (ii) expand factual knowledge about the levels of achievement in the different subject matters at different grade levels, and (iii) develop sound evidence concerning fundamental education provision. These kinds of data are essential in order to judge the extent to which there has been an improvement, no improvement, or even a deterioration in achievement levels and the conditions of schooling.

A response to the policy concerns

In 1994, the Ministry became aware of the existence of a major cross-national educational policy research project that was being designed for Southern Africa. At this time the project was in the process of changing from a co-operative venture between the International Institute for Educational Planning (IIEP) and the Zimbabwean Ministry of Education and Culture, to a sub-regional initiative. Kenya was able to send a representative to the first meeting of the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) in September 1994.

The target class for the SACMEQ project was Standard 6, which, for most member countries of the Consortium, was either the last or penultimate class of primary examination. The subject matter to be tested was reading. This suited Kenya since reading was considered to be the key subject in primary school in that it was an essential prerequisite for mastery of other subject areas within the curriculum.

The aims of the SACMEQ project included a focus on the collection of baseline data that would provide an assessment of the conditions of schooling, and also several proposals to employ data analyses designed to determine the relative effects of educational input variables on achievement. All of these issues, as mentioned earlier, were of major concern to the Ministry of Education and Human Resources.

The five main policy-related questions for SACMEQ's initial project

SACMEQ's initial educational policy research project, commenced with a dialogue between the SACMEQ National Research Co-ordinators (NRCs) and the key decision-makers within ministries of education in eight countries of the Southern Africa sub-region. This dialogue provided lists of 'high priority' educational policy concerns that were subsequently reviewed by the SACMEQ NRCs in a search for common themes. The review yielded five general areas of policy concern, which were then used to generate the following main policy-related questions.

(a) What are the baseline data for selected inputs to primary schools?

(b) How do the conditions of primary schooling compare with the Ministry's own benchmark standards?

(c) Have educational inputs to primary schools been allocated in an equitable fashion among and within educational provinces?

(d) What is the level of reading achievement for Grade 6 pupils?

(e) Which educational inputs to primary schools have most impact upon reading achievement of Grade 6 pupils?

These policy questions were not only appropriate for Kenya, but also the co-operative nature of the SACMEQ project allowed Kenyans to learn a great deal about the ways in which neighbouring countries used research to tackle important areas of educational policy. Involvement in the SACMEQ policy research programme also contributed to capacity building within the Planning Department and other Departments, in the technical skills of sampling, instrument design, data collection, data entry, data cleaning, data analysis and report writing. All of these skills are required in order to conduct high-quality, large-scale educational policy research surveys. It was recognized that the acquisition of these skills was necessary if the Ministry was to be able to undertake a continuing programme of research that would monitor and evaluate the growth and performance of the Kenyan education system.

Chapter 2

The conduct of the study

Introduction

This chapter describes the way in which the first educational policy research project of the Southern Africa Consortium for Monitoring Educational Quality (SACMEQ) was conducted in Kenya. First, it describes the collaborative work undertaken by the SACMEQ countries in order to plan and implement the study in each country. Second, it describes the instrument development, sampling procedures, data collection, data entry, and data-cleaning exercises. Finally, it presents an overview of the structure of the report.

Co-operation with SACMEQ

In 1991 and 1992, the IIEP and the Ministry of Education and Culture in Zimbabwe conducted a research study on *Indicators of the Quality of Education.* The research reports which emerged from this study (for example, Ross and Postlethwaite (1992) and Murimba et al. (1994)) became widely respected in many countries of the Southern Africa sub-region because of their direct impact upon educational policy in Zimbabwe. This study served as a model which could be emulated in other countries of the region and resulted in a series of workshops for educational planners. In 1992, an IIEP workshop on 'Data Building and Data Management' based on the knowledge and experience gathered from the Zimbabwe study was organized in Harare to provide around 50 educational planners from eight countries with the technical skills and research materials required to undertake a national study of primary schools. In addition, 'hands-on' training in all aspects of computer-based data processing was provided at a more advanced IIEP workshop on 'Data Processing for Policy Report Preparation', which was held in Harare in September 1993.

The educational planners who attended the 1993 seminar subsequently prepared a proposal (Moyo et al., 1993) which was designed to launch a co-operative sub-regional project aimed at monitoring progress towards the achievement of the educational quality goals defined by the 1990 Jomtien Conference on Education for All. This proposal was developed into a major research plan at two meetings in Paris (July, 1994) and Harare (September, 1994). It was on the basis of this plan that SACMEQ was launched in February 1995 by the National Research Co-ordinators (NRCs) from the Ministries of Education of Kenya, Malawi, Mauritius, Namibia, Tanzania (Mainland), Tanzania (Zanzibar), Zambia, and Zimbabwe.

The drafts of the data collection instruments to be used for SACMEQ's initial policy research project were designed at the 1994 Harare meeting, and the NRCs were to trial test them in their own countries. At the same time, blank tables were designed which would later be used to summarize the results of the data analyses. Five of the participating countries conducted surveys between August and October 1995. Although Kenya carried out the pilot survey in 1995, it was not able to carry out the main survey due to logistical problems.

As part of the second phase of the Strengthening Primary Education (SPRED 2) Project funded by the British Department for International Development (DfID), the Ministry of Education (MOE) carried out a National Primary Baseline (NPB) Survey in 1997 on the status of primary education and the factors that affect the quality of education. It was agreed that the SACMEQ data collection instruments would be used to supplement those that would be developed for the NPB. While the NPB and SACMEQ initiatives were related in many ways, it was decided to undertake a shared data collection in association with separate analyses and reporting.

Instrument development

The instruments developed by the SACMEQ NRCs included a pupil test on basic reading literacy; a pupil questionnaire; a teacher questionnaire; and a school head questionnaire.

For purposes of the initial SACMEQ study, reading literacy was defined as: "*the ability to understand and use those written language forms required by society and/or valued by the individual*". This definition was found to be sufficiently general to accommodate the diversity of languages represented in the participating SACMEQ countries, but specific enough to provide adequate guidance on test construction. Writing ability was deliberately excluded from the definition, and only minimal writing ability was required of the pupils throughout the test.

The domains of reading comprehension considered by SACMEQ, included the following:

(a) *Narrative prose:* Continuous text that aims to tell a story – whether fact or fiction;

(b) *Expository prose:* Continuous text that aims to describe, explain, or otherwise convey factual information or opinion to the reader;

(c) *Documents:* Structured information organized in such a way that the reader is required to search, locate, and process selected facts rather than read every word of a continuous text.

After examining syllabi across SACMEQ countries in the subject area of Standard 6 reading, a common framework or 'blueprint' for the pupil reading test was developed. The blueprint was constructed by preparing a 'skills by domain' table. The three domains have been described above. The seven reading skills were obtained after exhaustive discussion of the most important skills mentioned in the reading syllabus for each SACMEQ country. This table has been reproduced as *Table 2.1.* There were 21 cells in the table and, in order to ensure that the test provided a balanced coverage of the required reading skills and the main reading domains, the number of items allocated for each cell was in proportion to the emphasis given to it across the syllabi. It was decided to limit the test to around 60 items so as to avoid problems of pupil fatigue that would have resulted from a very long test. After extensive trial-testing and further analyses of data, a final list of 59 items was prepared.

A deliberate decision was taken not to have 'rotated tests' – in which different test forms containing subsets of 'common items' are administered to groups of pupils. It had been found in previous research carried out by the International Association for the Evaluation of Educational Achievement (IEA) that some countries had experienced difficulties in fieldwork operations when employing rotated tests. Furthermore, since this study was concerned with reading (and not school subjects that have many sub-skill areas), it was felt that around 60 items were sufficient to cover the general construct of 'reading literacy'.

Table 2.1. 'Skills by domain' blueprint for the pupil reading test

Reading skills	Reading domain			Total items
	Narrative	Expository	Documents	
Verbatim recall	10	14	0	24
Paraphrase concept	6	4	0	10
Find main idea	1	1	0	2
Infer from text	4	2	0	6
Locate information	0	0	9	9
Locate and process	0	0	6	8
Apply rules	0	2	0	2
Total items	**21**	**23**	**15**	**59**

Following the construction of the test blueprint, the reading passages and their accompanying test questions were prepared and then subjected to extensive expert review. These passages were selected from items submitted by the SACMEQ Ministries of Education. All items were in a multiple-choice format with four options per item. The possibility of including open-ended questions was considered and rejected because of financial constraints within countries for the training of scorers and for conducting the scoring.

For the trial testing in each country, a judgement sample of at least five schools and one intact class per school was used. A classical item analysis was undertaken on each country's data, and also on the pooled data from all countries. Where the point biserial correlation between the 'correct' answer and the total score was less than 0.20, then either the passage, item stem or option answer was improved or, if this was not possible, the item was dropped from the final test. Furthermore, if the point biserial correlation between a wrong answer and the total score was positive, then either the option was reworded or the item was dropped from the final test.

After the analysis of the trial-testing data, the reliability of the total test score was considered to be too low and further trial-testing was undertaken on other items. The second phase of trial-testing resulted in a final test version of 59 items with an internal structure as shown in *Table 2.1.* At the same time, it was agreed that a pooled item analysis of the final test data should be undertaken and that if there were items that were 'misbehaving' then they should be dropped.

The different questionnaires were prepared to address the data collection needs outlined in the blank tables that had been prepared at the initial design phase of the study. Where an indicator was required for a table, the specific variables required for the indicator were listed and the questions required for each variable prepared. The questions were then ordered in a systematic fashion within the different questionnaires, and then trial-tested on pupils in the judgement sample schools.

The Teacher Questionnaire was tried on the reading teachers of the judgement sample pupils, and the School Head Questionnaire on the school heads of the judgement sample schools. The distribution of responses was examined and, where necessary, revisions made to the questions. Interviews were also held with the teachers and school heads after they had completed their questionnaires in order to obtain their inputs concerning the clarity and relevance of each question. It should be noted that in one or two countries, there were some questions that were considered to be not relevant but were, nevertheless, retained for the sake of comparability among all of the SACMEQ countries.

Sampling

All sample designs applied in SACMEQ's initial project were selected to meet the standards set down by the International Association for the Evaluation of Educational Achievement (Ross, 1991). These standards required sample estimates of important pupil population parameters to be: (a) adjusted by weighting procedures designed to remove the potential for bias that may arise from different probabilities of selection, and (b) have sampling errors that were of the same magnitude or smaller than a simple random sample of 400 pupils (thereby guaranteeing 95 percent confidence limits for sample estimates of population percentages of plus or minus five percentage points, and 95 percent confidence limits for sample estimates of population means of plus or minus one tenth of a pupil standard deviation unit).

For sampling purposes, it was necessary to have computerized data on the latest school enrolments for each grade level. No such data existed at the Ministry, and after discussions between the MOE and the IIEP, it was agreed that the Kenya Certificate of Primary Education (KCPE) examination entry data should be used.

The Kenya National Examinations Council (KNEC) data file is stratified into the eight administrative provinces, but to ensure that disadvantaged districts (which also happen to have small populations) were not left out of the sample, certain districts were clustered together to form a ninth 'province'. The districts that made up this 'province' were Isiolo, Kajiado, Lamu, Marsabit, Moyale, Mwingi, Tana River, Tharaka Nithi, Turkana and West Pokot. It must be pointed out here that this ninth 'province' was constructed only for the purposes of drawing the sample. Data obtained from these districts were analyzed together with those of the other districts in the administrative province where the said districts were located. Thus, though for the sampling procedure a ninth 'province' had been created, the data analyses for this report were focused on the eight administrative provinces.

The IIEP's SAMDEM sampling software was used to select the sample. It was agreed that a national sample of 185 schools would be needed in order to meet the sampling accuracy requirements set down by the SACMEQ NRCs.

Within each school, a simple random sample of 20 pupils from all Standard 6 pupils was drawn. The figure of 20 pupils was chosen because, from practical experience, it was known that increasing the number of pupils within schools above this figure would increase the accuracy of sampling by a negligible amount, but would increase the cost of the data collection considerably. There were also concerns among the SACMEQ NRCs that conditions in many schools would not permit a valid administration of the reading test if more than 20 pupils per school were involved.

It was not possible to obtain an accurate national list of schools in association with the numbers of Standard 6 pupils that formed the defined target population. However, an accurate national list of schools registered with the Kenya National Examinations Council was available, and this list had up-to-date enrolments for Standard 8 pupils – which were used as 'measures of size' for the first stage of sampling.

At the first stage of sampling the schools were stratified by the nine strata mentioned above, and then samples of schools were selected within each of the strata. The schools were selected with a probability proportional to size method where the 'measure of size' was equal to the Grade 8 enrolment. Within selected schools a simple random sample of 20 Standard 6 pupils was made.

The probability of selecting a Standard 6 pupil located in school i of stratum h was as follows.

$$p = a_h \times \frac{MOS(N_{hi})}{\Gamma_i MOS(N_{hi})} \times \frac{n_{hi}}{N_{hi}}$$

where: a_h = number of schools selected in stratum h

n_{hi} = achieved sample of pupils in school i

N_{hi} = total number of Standard 6 pupils in school i

MOS (N_{hi}) = measure of size for school i (number of Standard 8 pupils)

Σ_i MOS (N_{hi}) = sum of MOS (N_{hi}) for stratum h (total of Standard 8 pupils)

For example, consider the first school selected from the first stratum. The school was in the Coast Province where 20 schools were selected (a_1 = 20). The school had a total enrolment of 72 Standard 6 pupils (N_{hi} = 72) and a total enrolment of 49 Standard 8 pupils (MOS (N_{hi}) = 49). A simple random sample of 20 Standard 6 pupils was selected in this school – however, an achieved sample of 16 was obtained because of absenteeism due to illness on the day of testing. In the following calculations we assume that this absenteeism was random and that, in effect, we have a simple random sample of 16 pupils (n_{hi} = 16). The total number of Standard 8 pupils in the Coast Province was 22,880 (Σ_1 MOS (N_{hi}) = 22,800).

Using these values, we may calculate the probability of selecting a Standard 6 pupil in the first school selected in the Coast Province.

$$p = 20 \times \frac{49}{22,880} \times \frac{16}{72} = 0,009518259$$

The reciprocal of this probability, often called the 'Raising Factor' (RF), provides an indication of the number of Grade 6 pupils in the population that are 'represented' by a single pupil selected in the first sample school in Coast Province.

In this case RF = 105.0612302, and the sum of these raising factors over the pupils that formed the total sample of 3,233 pupils provides an *estimate* of the size of the population of Standard 6 pupils in the defined target population. The deviation of the size of this estimate from the *actual* size of the Standard 6 population depends, in large part, upon how near the figures used for the 'measures of size' for each school were to the total number of Grade 6 pupils in each school. That is, on how close the MOS (N_{hi}) values were to the N_{hi} values.

It is these raising factors (or another set of numbers proportional to them) that can be used as weighting factors in the analysis of data.

When the data collection had been completed and the data had been cleaned and entered into a computer in readiness for analysis, it was decided that the data should be 'post-stratified'. At this stage of the analysis new accurate data concerning the stratum sizes for Standard 6 pupils became available. This information was combined with the achieved total sample size and the total population size to calculate final sampling weights that were also 'normalized' – so that their sum over all pupils in the sample was equal to the total sample size.

That is, pupil weight $= \dfrac{RF}{\Gamma RF} \times N_h \times \dfrac{n}{N}$

Where: N_h = total number of Standard 6 pupils in stratum h

ΣRF = sum of raising factors for stratum h

n = achieved total sample size

N = ΣN_h = total population size for Standard 6 pupils

Returning to the first school selected in the Coast stratum we know that (a) there were 37,813 Standard 6 pupils in this stratum ($N_h = 37{,}813$), (b) that the sum of the raising factors for this stratum was 31,704 ($\Sigma RF = 31{,}704$), the achieved sample size for the survey was 3,233 pupils ($n = 3{,}233$), and the total population size for Standard 6 pupils was 654,037 pupils ($N = 654{,}037$).

Using this information, the final weight for a pupil in the first school selected in the Coast stratum was as follows.

$$\text{Final pupil weight} = 105.0612302 \times \frac{37,813}{31,704} \times \frac{3,233}{654,037} = 0.61940245$$

Table 2.2. The population of Standard 6 pupils and the size of the unweighted and weighted samples

Stratum	Population of Standard 6 pupils		Unweighted sample of Standard 6 pupils		Weighted sample of Standard 6 pupils	
	No.	%	No.	%	No.	%
Coast	37 813	5.8	356	11.0	187	5.8
Central	106 818	16.3	464	14.4	528	16.3
Eastern	117 615	18.0	314	9.7	581	18.0
Nairobi	19 068	2.9	362	11.2	94	2.9
Rift Valley	148 729	22.7	449	13.9	735	22.7
Western	89 770	13.7	337	10.4	444	13.7
Nyanza	118 291	18.1	358	11.1	585	18.1
North Eastern	4 137	0.6	261	8.1	20	0.6
Disadvantaged	11 796	1.8	332	10.3	58	1.8
Kenya	**654 037**	**100.0**	**3 233**	**100.0**	**3 233**	**100.0**

In *Table 2.2*, the numbers of pupils in Standard 6 for all strata have been listed in association with the weighted and unweighted numbers of pupils in the final sample of 3,233 pupils. Note that the application of the final pupil weights has resulted in the percentage values for the total number of weighted pupils in each stratum (see final column of figures) to be equal to the percentage values for the total population of Standard 6 pupils (see second column of figures).

The response rates for the sample have been recorded in *Table 2.3*. At the school level the response rate was 100 percent. However, the response rate at the pupil level for Kenya overall was 87.4 percent – a figure that was very close to the SACMEQ target of 90 percent.

Calculation of sampling errors

When data are collected using multi-stage sample designs from sources at different levels of data aggregation (pupil, teacher, school) a great deal of care needs to be taken in interpreting the stability of sample estimates for population characteristics. In this report, all data analyses were undertaken at the between-pupil level. That is, all data collected from teachers and school heads were disaggregated across the pupil data file before analyses were undertaken.

Table 2.3. The planned and achieved samples of schools and pupils

Stratum	Schools		Pupils	
	Planned	**Achieved**	**Planned**	**Achieved**
Coast	20	20	400	356
Central	25	25	500	464
Eastern	20	20	400	314
Nairobi	20	20	400	362
Rift Valley	25	25	500	449
Western	20	20	400	337
Nyanza	20	20	400	358
North Eastern	15	15	300	261
Disadvantaged	20	20	400	332
Kenya	**185**	**185**	**3 700**	**3 233**

The interaction of sample design and level of data analysis required that extra caution be used in interpreting estimates obtained by using information from teachers or school heads. The sampling errors of estimates derived from these two sources were larger than the figures that were reported when using standard statistical software packages.

In the following chapters of this report, the standard errors of sampling have been provided for all important variables. The calculation of these errors acknowledged that the sample was not a simple random sample – but rather a complex two-stage cluster sample that included weighing adjustments to compensate for variations in selection probabilities. The errors were calculated by using the IIEPJACK software (Ross and Leite, in preparation). This software employs the Jackknife technique in order to calculate sampling errors and design effects.

The sampling errors have been labelled 'SE' in the tables presented throughout this report. For example, consider the percentages and means that have been reported in *Table 2.4.*

(a) For Kenya overall the sample percentage of pupils who reached the minimum level of mastery on the reading test was 64.8 percent and the sampling error (SE) was 2.35 percent (see Table 2.4). These figures indicated that one could be 95 percent confident that the population percentage of pupils who reached the minimum level of mastery was within the following limits: 64.8 ± 2 (2.35) percent. That is, between a high limit of 69.5 percent and a low of 60.1 percent.

Table 2.4. Kenya overall: Sampling errors (SE), design effects, and actual/effective sample sizes for selected variables at the pupil, teacher, and school-head levels

Variable	Mean	%	SE	Design effect	Sample size	
					Actual	Effective
At pupil level						
Minimum mastery level	31.5	64.8	2.35	7.83	3 233	414
Desirable mastery level	24.8	23.4	2.10	7.91	3 233	409
Score on total test			0.57	10.41	3 233	311
Score on essential items			0.44	10.44	3 233	310
Average				**9.15**	**3 233**	**361**
At teacher level						
Teacher academic education	13.0	34.5	0.10	25.59	3 165	124
Total classroom resources	6.3	43.6	0.24	22.24	3 165	143
Available classroom library			4.32	26.14	3 165	122
Sex of teacher			4.47	25.75	3 165	123
Average				**24.98**	**3 165**	**128**
At school-head level						
Pupil-toilet ratio	48.8	91.7	2.03	17.40	3 216	185
Total school resources	8.2	10.5	0.26	18.65	3 216	173
Available school staffroom			2.41	24.52	3 216	132
Sex of school head			2.67	24.37	3 216	132
Average				**21.23**	**3 216**	**156**

Table 2.5. Coast Region stratum: Sampling errors (SE), design effects, and actual/effective sample sizes for selected variables at the pupil, teacher, and school-head levels

Variable	Mean	%	SE	Design effect	Sample size	
					Actual	Effective
At pupil level						
Minimum mastery level	32.6	69.4	5.57	5.53	378	69
Desirable mastery level	25.7	29.4	5.75	6.02	378	63
Score on total test			1.54	8.84	378	43
Score on essential items			1.16	8.72	378	44
Average				**7.28**	**378**	**55**
At teacher level						
Teacher academic education	12.4	13.4	0.19	18.66	378	21
Total classroom resources	6.3	34.3	0.67	18.12	378	21
Available classroom library			7.32	17.43	378	22
Sex of teacher			11.17	20.92	378	19
Average				**18.78**	**378**	**21**
At school-head level						
Pupil-toilet ratio	73.8	95.1	9.22	22.49	378	17
Total school resources	8.3	18.7	0.59	21.12	378	18
Available school staffroom			4.43	15.80	378	24
Sex of school head			9.43	22.12	378	18
Average				**20.38**	**378**	**20**

(b) For Kenya overall the *sample mean* for pupils on the 59 item test was 31.5 and the sampling error (SE) was 0.57 (see *Table 2.4*). These figures indicated that one could be 95 percent confident that the *population mean* for pupils on the 59 item test was within the limits: 31.5 ± 2 (0.57). That is, between a high limit of 32.6 and a low of 30.4.

As mentioned above, by using the IIEPJACK software, it was possible to establish the sampling errors for all variables presented in this report. It is extremely interesting to examine the values of the 'design effect' (Kish, 1965) and the 'effective sample size' (Ross, 1987) for a selection of these variables across the different levels of data acquisition. The design effect is an indicator of the increase in sampling error that occurs for a complex sample in comparison with a simple random sample of the same size. The effective sample size offers an alternative approach to describing the impact of the complexity of the sample design and the data level on the precision of sample estimates.

To illustrate, consider the design effect and effective sample size values for the variable describing minimum mastery level in *Table 2.4*. The design effect value of 7.83 indicated that the variance of the sample estimate of the mean on this variable was 7.83 times larger than would be expected for a simple random sample of the same size. The effective sample size value of 414 showed that the complex sample of 3,233 pupils had a sampling error for this variable which was the same as would be obtained by employing a simple random sample of 414 pupils.

Now consider the values of the effective sample size for data collected at the teacher and school-head level. These data were disaggregated across the 3,233 pupils – but notice that the effective sample size for these variables was much smaller. For example, the effective sample size for 'Teacher academic education' was 124 pupils, and the effective sample size for 'Pupil-toilet ratio' was 185 pupils. The main point made here is that the sampling errors for information gained from teachers and school heads were much larger than would occur by using the total number of pupils as the sample size in sampling error calculations.

In *Table 2.5*, the information concerning sampling errors, design effects, and actual effective sample sizes, has been presented, as an illustration, for one province: Coast Province. The information contained within this table permitted one to consider the stability of sample estimates obtained for pupils in the Coast Province. Notice that, again, the source of data (pupil, teacher, or school heads) had a dramatic impact upon the values of the design effects and the effective sample sizes.

Data collection

The data collection exercise took place in the second and third weeks of July 1998. The SACMEQ study was combined with the National Primary Baseline Study, which collected data not only from Standard 6 pupils and teachers but also from Standard 3 pupils and teachers. The data collectors were divided into 10 teams, each team with about 10 members. A total of 100 data collectors were used. The data collectors included District Teacher Advisory Centre (TAC) tutors in the districts from which the sample schools came. The district TAC tutors were used because they knew the location of schools and they also spoke the local language – which was critical for this survey.

The fieldwork was guided by two detailed manuals which had been developed by the SACMEQ National Research Co-ordinators. The NRC Manual listed precisely what had to be done at every step in the conduct of the study, and the Data Collectors Manual described every step that had to be taken from the receipt of the data collection instruments to the time they were returned to the Ministry. The manual for data collectors was used by the NRCs to conduct training sessions for the data collectors. The training of data collectors took five days and part of the training involved administering the instruments to 10 schools (which were not in the survey sample). The training took place at two venues and the data collectors were assigned to the venue closest to them.

In preparation for the exercise, letters were sent to Provincial Directors of Education (PDE), District Education Officers (DEOs), and Head Teachers asking them to co-operate and to give the data collectors all necessary assistance. Of particular importance at this stage was the provision of transport. The data collectors had to rely on transportation offered by the DEOs.

The following difficulties were experienced during the two weeks of data collection:

(a) During the second week of data collection, there was a national teachers' strike. Consequently, data collection took longer than was originally anticipated. This, however, is unlikely to have affected the quality of the data since most of the questions dealt with general school organization and the availability of facilities. Extending the data collection exercise by a few days was not likely to affect the status quo. However, there is the possibility that responses to questions related to teacher motivation might have been influenced by the general mood of the teachers.

(b) Due to security problems, one of the schools in Eastern Province was not tested during the time the other schools were being tested. Data were collected from this school during the second week of September.

Data entry, cleaning and analysis

The Ministry contracted the data entry to an international NGO, The Population Council. This was found necessary due to the fact that the Ministry lacked the necessary capacity, especially in terms of equipment. The Population Council worked with the Ministry staff, as part of capacity building.

The completed instruments were checked to ensure the return of tests and questionnaires for pupils, teachers, and school heads. During this process it was discovered that some head teachers and teachers who had been absent during the teachers' strike had not completed their questionnaires. The NRC arranged for these questionnaires to be administered. All instruments were accounted for and serialized to allow easy retrieval, if this became necessary during data cleaning.

Before the data entry exercise, both the IIEP and the Population Council carried out a three-day training workshop. The Data Entry Manager (DEM) computer software developed at the IIEP (Schleicher, 1995) was used for data entry. This software was adapted specifically for the entry of SACMEQ data. No problems were encountered in the installation and use of this software.

Four full time data entry clerks took about 20 days to enter all of the data, using a double-entry method to guard against errors. Once all the data had been entered, data cleaning was undertaken before the data files were forwarded to the IIEP for further processing. The process of data cleaning continued for quite a while, as the IIEP experts noticed more 'cleaning' issues in the process of data analysis.

Conclusion

This chapter has described the procedures undertaken in order to conduct SACMEQ's initial educational policy research project in Kenya. Detailed explanations were given of the development of instruments, the sampling methods, and the fieldwork operations.

The following five chapters of this report focus on the educational policy implications of the results arising from the data analyses. The chapters address each of the five main policy questions described in the first chapter. *Chapter 3* presents the results from the analysis of baseline data for selected inputs to primary schools. *Chapter 4* examines the results on how the conditions of schooling in Kenya compare with the Ministry's own benchmarks. *Chapter 5* analyzes the extent to which educational inputs to schools have been allocated in an equitable fashion among and within provinces. *Chapter 6* presents the reading test results. Each of the *Chapters 3* to *6* includes a series of policy suggestions based on the results presented in them. Finally, *Chapter 7* presents 'An Agenda for Action' which summarizes the policy suggestions, classifies them in terms of low to high cost, and indicates whether they involve short- or long-term action.

Chapter 3

What are the baseline data for selected educational inputs to primary schools in Kenya?

Introduction

The aim of this chapter is to present some examples of baseline data for inputs to Kenyan primary schools in order to establish a descriptive account of the pupils, their teachers, and their schools. These data are important for two reasons. First, they provide a 'context' for the analyses described later in the report. Second, they serve as baseline data such that when a similar reading survey for Standard 6 is undertaken in future, it will be possible to compare the extent to which such context variables have changed. High-quality data that address the important areas of 'context' and 'levels and distribution' provide educational planners with a sound means of mapping the general evolution of the education system and also offer tools for the identification of existing or emerging problems. The first educational policy suggestion to be presented in this report therefore looks to the future in acknowledgement of the importance of establishing data collections that can be used to study trends over time.

Policy Suggestion 3.1: The Ministry should plan to undertake a follow-up survey of the same target population employed during SACMEQ's first study in order to examine changes in important educational indicators over time.

A note on the interpretation of the data analyses

Before presenting the results, two points should be stressed. The first is that the variables presented in this chapter represent a small subset of the large number of variables for which data were collected. The Ministry will make a separate publication containing descriptive statistics for all variables in the study available to interested readers.

The second point is that it is very important to interpret each statistic in association with its sampling error. It will be recalled from *Chapter 2* that the sample was drawn in order to yield standard errors of sampling in Kenya, such that a sample estimate of a population percentage would have a standard error of ±2.5 percent. For this level of sampling accuracy we can be sure 19 times out of 20 that the population value of a percentage lies within ±5 percent of the estimate derived from the sample. The sampling errors for means are also given in the tables and the same principle applies for limits of two standard errors of sampling.

Where a percentage or a mean is presented for a sub-group of pupils (such as for provinces) then the standard error will be greater than for the sample as a whole. This occurs, in part, because the sample sizes for sub-groups are smaller than the total sample size. Had smaller standard errors for sub-groups been required, this would have increased the size of the total sample and also of the budget required to undertake much larger field data collections and data analyses.

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To illustrate, consider the first column of entries in *Table 3.1*. The average age of pupils in months at the time of data collection has been presented separately for each province and for the nation overall. The standard error (SE) of each average has also been presented. The average age for pupils in the Coast Province was 164.7 months at the time of data collection, and the standard error for this estimate was 2.93 months. That is, there were 19 chances in 20 that the average age of the population of Standard 6 pupils in this province was 164.7 ±2 (2.93). In other words, it can be said that we can be 95 percent confident that the population value was between 158.8 months and 170.6 months.

In interpreting the values in *Table 3.1* and other tables throughout this report, it is important to remember that the percentages and means have been presented in terms of pupils. That is, pupils were the units of analysis even though some variables described in the report referred to teachers and schools. Where a percentage for a variable that describes teachers has been presented, this percentage should be interpreted as 'the stated percentage of pupils were in schools with teachers having the particular characteristic'. Similarly, a percentage for a variable that describes schools should be interpreted as 'the stated percentage of pupils were in schools with the particular characteristic'.

Specific policy questions related to educational inputs

In order to guide the data analyses, the broad educational policy questions posed in this chapter were divided into six specific questions. These six questions were used to develop a more structured response to the educational policy issues surrounding the main question.

(a) What were characteristics of Standard 6 pupils?

(b) What were the characteristics of Standard 6 teachers?

(c) What were the teaching conditions in primary schools?

(d) What aspects of the teaching function designed to improve the quality of education were in place?

(e) What was the general condition of school buildings?

(f) What level of access did pupils have to books?

What were the characteristics of Standard 6 pupils?

A wide range of information about pupil characteristics has been presented in *Tables 3.1* and *3.2*. Information has been listed concerning the age of Standard 6 pupils in months, the sex of these pupils, the number of books they had in their homes, the wealth of their homes (as measured by an Index of Possessions), the regularity of eating meals (as measured by an Index of Regular Meals), the educational level of their parents, the use of the English language in their homes, the number of days that they were absent in the month before data collection, the percentage of pupils who were taking extra lessons, the extent to which the pupils were given homework, and, finally, the amount of grade repetition.

The information in *Table 3.1* covers those background characteristics that were more 'home related', and the information in *Table 3.2* presents 'school-related' information.

Table 3.1. The percentages, means, and sampling errors for selected pupil background characteristics (home related)

Province	Age (months)		Sex (female)		Books at home (number)		Possessions at home (index)		Meals (index)		Parent education (index)	
	Mean	SE	%	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Coast	164.7	2.93	45.1	2.68	37.2	5.99	5.3	0.45	10.9	0.23	7.0	0.50
Central	161.6	1.48	51.5	2.10	42.8	6.64	5.6	0.24	11.5	0.11	8.2	0.22
Eastern	167.6	1.36	46.5	1.91	32.5	3.16	4.7	0.17	10.1	0.13	7.3	0.25
Nairobi	149.3	1.38	54.9	3.77	59.5	9.40	8.5	0.44	11.2	0.15	9.9	0.27
Rift Valley	166.5	2.50	49.4	3.38	38.8	9.49	5.0	0.40	11.2	0.17	6.6	0.37
Western	170.0	1.92	50.4	3.00	27.5	4.86	4.8	0.23	10.2	0.22	7.3	0.26
Nyanza	168.1	2.12	48.6	3.16	42.1	8.18	5.3	0.30	11.1	0.18	7.9	0.30
North Eastern	172.0	2.49	21.4	4.42	25.5	8.34	3.5	0.56	10.9	0.20	4.2	0.41
Kenya	**165.9**	**0.81**	**48.9**	**1.17**	**37.7**	**3.01**	**5.2**	**0.13**	**11.1**	**0.07**	**7.5**	**0.13**

a) Age of Standard 6 pupils

The official age of entry to Standard 1 is six years. Pupils in Standard 6 should ideally be 11 to 12 years old. In *Table 3.1*, it can be seen that the average age of children in Standard 6 in Kenya, during the third week of the seventh month of the school year was 165.9 months or nearly 14 years. The value of the age of Standard 6 pupils was calculated in months by comparing birth dates with the date of testing. This result for average age was much higher than the expected age and may be explained by the fact that the majority of Standard 6 pupils have repeated at least one class. The probable reasons for this were poor school performance or staying on in Standard 6 in an effort to ensure good grade levels in the Kenya Certificate of Primary Education. The results also indicated that children in the North Eastern Province were much older than the children from the other provinces (over 14 years), while in the Nairobi Province children were much younger (12 years). A number of factors contribute to the higher age level of children in the North Eastern Province, including the pastoral way of life which sometimes necessitates children dropping out of school – especially when there is drought and they have to travel long distances herding and searching for water. When conditions are not too harsh, the children go back into school. Long distances to schools coupled with insecurity (especially along the Somali border) lead to late entry to school. On the other hand, children in Nairobi start school at an early age, mainly because their parents are working and busy, and would prefer to have children in school rather than at home.

Policy Suggestion 3.2: The Ministry should introduce more appropriate age limits for enrolment into Standard 1 for children in pastoral areas, where economic and social conditions do not allow them to conform to the norm of six years. As measures are taken to improve the conditions (for example, having schools closer to the pupils) the age limits could be adjusted.

Policy Suggestion 3.3: The Ministry should strengthen out-of-school programmes as a complementary way of providing education opportunities to those over-age children who have missed the chance to join the formal system at the right age.

b) Gender distribution

In *Table 3.1*, the percentage of girls in Standard 6 has been given for the different provinces and the country as a whole. The Standard 6 level at the national level was near parity in enrolment between boys and girls, with 48.9 percent girls and 51.1 percent boys. Taking into account the standard errors of sampling, it may therefore be said that there was no major difference between the percentages of boys and girls in school at Standard 6 level. However, there were significant variations among provinces, with the North Eastern Province having only 21.4 percent girls of the total children enrolled in Standard 6, while the Central, Nairobi and Western Provinces had 51.5, 54.9 and 50.4 percent girls enrolled in Standard 6, respectively.

Policy Suggestion 3.4: The Ministry should analyze available data and undertake any additional research required to establish the causes for gender imbalances in pupil enrolments in upper-primary classes. Proposals for action should be made on the basis of these analyses to reduce early school leaving, especially where one sex leaves school in greater numbers than the other.

Policy Suggestion 3.5: The Ministry should consult with the staff of the North Eastern Provincial Education Office in order to plan strategies for ensuring that the percentage of girls enrolled in school in Standard 6 is raised.

c) Books in the home

The number of books in a pupil's home can be regarded as a reading resource. From other studies (Elley, 1992) it has been found that, in most countries of the world, the availability of books for children to read is highly conducive to better levels of reading achievement. The Standard 6 pupils involved in this study were asked to indicate the approximate number of books in their home according to six categories: 1 = no books in the home; 2 = 1-10 books in the home; 3 = 11-50 books in the home; 4 = 51-100 books in the home; 5 = 101-200 books in the home; 6 = more than 200 books in the home.

The mid-point of each value range was used to estimate the total number of books in the home. For example, the value 1 was recorded as zero books, the value 2 was recorded as the five books, and so on. The value 6 was recorded (as an estimate) to 250 books. From *Table 3.1*, it can be seen that the average Standard 6 pupil in Kenya came from a home where there were around 38 books. In Nairobi the mean score was around twice the levels found in

Eastern, Western, and North Eastern. The values across districts ranged from homes having an average of 25.5 books in North Eastern Province to 59.4 books in Nairobi Province.

Policy Suggestion 3.6: Given that the availability of books is essential if children are to improve their reading comprehension, it is incumbent on the educational authorities to ensure that children have access to books either through school or mobile libraries. This help is needed especially in Western and North Eastern Provinces.

d) Possessions in the home

The Standard 6 pupils were asked if they had the following 14 items at home: daily newspaper, weekly or monthly magazine, radio, television set, video-cassette recorder, cassette player, telephone, refrigerator, car, motorcycle, bicycle, electricity, piped water, and a table to write on. For each item, pupils were given a score of 0 if they did not have the item and a score of 1 if they had the item. These scores were summed to form an 'Index of Possessions' which reflected the material wealth of the home. A pupil from a home with none of these items received a score of 0 and a pupil from a home with all of these items received a score of 14.

The mean scores on this index have been presented in *Table 3.1*. The average for the country was 5.2 possessions. Nairobi clearly stood out as having the 'wealthiest' pupil homes in the nation with an average of 8.5 possessions. The 'poorest' province was North Eastern Province with the very low mean of 3.5 possessions.

e) Index of regular meals

According to studies carried out elsewhere (Pollitt, 1990) poor nutrition results in lack of concentration and reduced perseverance in school. Regularity of meals was therefore seen as a factor likely to influence the acquisition of reading skills. The 'Index of Regular Meals' was a measure on a 12-point scale that assessed the number of meals that pupils reported they ate in a week. These meals were breakfast, lunch, and dinner. If a pupil ate no meals at all the score was 3, but if a pupil ate all meals each day, the score was 12.

In *Table 3.1* the means for each index have been presented. The national mean was 11.1 and there were no major differences among provinces. This indicated that the average Standard 6 pupil was receiving regular meals. The school-feeding programme, which provides a midday meal, was operating in a number of the districts where the survey was carried out and this may explain the fact that many children were provided with three meals a day. However, school feeding programme support from the World Food Programme will come to an end by 2003. If regular meals have to be provided to children, it is crucial that sustainability measures are put in place, especially in drought-stricken areas.

Policy Suggestion 3.7: The government should ensure that the school-feeding programme continues once support from the World Food Programme comes to an end, through encouraging sustainability measures such as income-generating activities. These initiatives can be supported by NGOs, religious and community-based organizations.

34

f) Parental education

The pupils were asked in the questionnaire about the level of education that each of their parents had received. This information was coded as follows:

Did not go to school = 1

Completed some primary school = 2

Completed all primary school = 3

Completed some secondary school = 4

Completed all secondary school = 5

Completed some education and/or training after secondary school = 6

The answers for each child's mother and father were summed to provide an 'Index of Parent Education'. In *Table 3.1*, it can be seen that the average value for this index for Kenya was 7.5. There was quite a range of values across the provinces for this index, ranging from the high values of 9.9 in Nairobi and 8.2 for Central Province, down to the lowest value of 4.2 in North Eastern Province.

These results reflected the commonly observed phenomenon of more educated people wishing to live in urban areas because of enhanced job opportunities related to industrial and commercial activities, better living amenities, and better schools for their children.

Policy Suggestion 3.8: The government should give greater recognition to the importance of adult education programmes, especially in rural areas, as a means of providing continuing education to parents who have not had such opportunities.

g) Speak English at home

English is the medium of instruction in Kenyan schools, starting from Standard 4. There are, however, many other local languages, including Kiswahili, spoken outside the school. Since the reading test used in the study was in English, it was important to examine the influence that speaking English outside the school had on pupil reading achievement.

In *Table 3.2*, it may be seen that the percentage of pupils who answered that they spoke some English at home (sometimes, often, or all the time) was 85.0 for Kenya. There was some variation among provinces – ranging from a low value of 78.3 percent in Central Province to a high value of 96.0 percent in Nairobi. The results were somewhat surprising in the Coast and North Eastern Provinces where one would have expected children to speak only Kiswahili and Kisomali at home.

Table 3.2. The percentages, means, and sampling errors for selected pupil background characteristics (school related)

Province	Speak English		Days Absent		Extra lessons		Homework		Repetition	
	%	SE	Mean	SE	%	SE	%	SE	%	SE
Coast	90.2	2.85	2.3	0.44	61.7	5.87	56.6	5.83	65.4	3.59
Central	78.3	4.14	1.9	0.21	72.3	4.53	77.8	3.49	68.5	3.61
Eastern	79.0	4.16	2.2	0.17	71.5	4.71	59.9	4.69	72.2	3.11
Nairobi	96.0	1.57	0.9	0.12	56.5	5.32	88.7	2.79	32.3	3.96
Rift Valley	86.2	2.56	2.1	0.21	61.5	6.60	51.8	6.91	65.7	5.10
Western	87.9	2.99	2.5	0.37	70.5	5.94	40.7	3.76	73.3	3.21
Nyanza	90.2	4.94	1.7	0.17	74.4	7.13	51.9	5.75	74.9	2.92
North Eastern	92.9	2.66	1.5	0.28	39.0	7.85	50.8	10.60	21.1	2.96
Kenya	**85.0**	**1.58**	**2.0**	**0.09**	**68.6**	**2.46**	**57.5**	**2.26**	**68.9**	**1.60**

h) Days absent in the previous month

Absenteeism has many times been cited as a problem in some of Kenya's schools and this is often said to be related to repetition and eventual dropping out of school. The performance of an individual child in school is greatly affected by absenteeism. In this study pupils were asked how many days they had been absent in the month before the SACMEQ data collection. As can be seen in *Table 3.2*, the average was 2.0 days at the national level. The lowest mean was 0.9 days for Nairobi, while the highest mean was 2.5 days for Western, followed closely by Coast with a mean of 2.3. The national average number of days absent does not reflect a serious problem of absenteeism in Kenyan schools. However, it is widely known that in certain districts the problem of learner absenteeism is more pronounced, and that this is linked to higher levels of grade repetition and drop-out rates.

Policy Suggestion 3.9: The Ministry should gather data in order to determine the main causes of learner absenteeism in those districts where it is prevalent, and design measures to curb such absenteeism.

i) Extra lessons

There is a developing trend for pupils to have extra lessons in school subjects, outside the official school day. This growing trend has caused major concern among parents and professionals in the field of education, especially with regard to the length of the school day, the workload placed on children at the primary-school level, and the widespread feeling that excessive amounts of school work prevent children from being children. Other issues raised relate to a teacher's ability to teach and correct pupils' homework in a situation where he/she teaches for more than eight hours a day, the likelihood of a teacher 'saving' the real teaching for tuition time, and also the general effect of extra payments on the work of a teacher.

This trend is confirmed by the high percentage of children answering that they received extra teaching/tuition. The national average was 68.6 percent. In Nyanza, Central, Eastern and Western Provinces the percentages were 74.4, 72.3, 71.5 and 70.5, respectively. The extent of extra teaching/tuition was low in North Eastern Province (39 percent). This could be attributed to the nomadic way of life in the province, which is a pastoral area. Children do not have much time to devote to extra lessons, because they have to go herding after school.

The increased costs and the longer school day caused by extra lessons may be a negative factor with respect to participation in education. It has been noted from the national enrolment statistics that there are high drop-out rates in the upper classes of primary, Standard 6 to 8. These are the classes where schools are most likely to introduce extra tuition with a view to preparing children for the Kenyan Certificate of Primary Education.

The very high percentages of pupils having extra tuition are worrying. It should not be the case that so many pupils have to receive these extra classes. Is it that the schools are failing the children? Is it that the parents are subsidizing the education system? What happens to the pupils who do not go to extra tuition? Are they the children of parents who cannot afford such extra tuition? Will this exacerbate the social divide in Kenya? This is clearly a serious educational and social problem and deserves further examination.

Policy Suggestion 3.10: The Ministry should undertake a special study of extra tuition in order to examine the following questions: Who goes and does not go? Who calls for the extra tuition? What is taught during this extra tuition?

j) Homework

The pupils were asked how often they received homework. The possible responses were: I do not get homework; once or twice per month; once or twice per week; and most days of the week.

It can be seen from *Table 3.2* that the national average of Standard 6 pupils receiving regular homework (that is, 'at least once or twice each week') was 57.5 percent. The variation among provinces was quite high. Nairobi and Central had very high values, but then there was a major gap between these and the other provinces. For example, only 40.7 percent of Standard 6 pupils in Western received regular homework. These major differences among provinces are a matter of concern as homework provides essential feedback to the teacher and gives an opportunity for the pupil to build up skills learned at school, and for the teacher to identify areas where lessons were not mastered.

Policy Suggestion 3.11: The Ministry should institute an investigation in all provinces except for Nairobi and Central in order to discover why the amount of homework being given is so little. The Ministry should then take steps to ensure that all pupils receive regular homework.

k) Repetition

The government policy regarding grade repetition is that no child should be forced to repeat a class. Children should only repeat on advice from the teacher – after consultation with, and the consent of, the child and the parents. The issue of repetition was mentioned earlier in the context of an analysis of the average age of Standard 6 pupils. In *Table 3.2* the percentages of Standard 6 pupils who had repeated at least one class have been listed. The national average was 68.9 percent, with the highest repetition occurring in Nyanza, Western, and Eastern Provinces of 74.9, 73.3, and 72.2 percent, respectively. The lowest percentages of children repeating classes were in North Eastern Province with 21.1 percent and Nairobi with 33.3 percent. The main reason for low rates of repetition in the North Eastern Province is probably because children there start school when they are much older than the required age. That is, many join Standard 1 at the age of 10 instead of the required age of 6 years. In Nairobi, low rates of repetition can probably be attributed to the fact that children actually perform well enough to go to the next grade. Another reason for high levels of repetition across all divisions is that when children miss school for many days because of non-payment of levies, this requires them to repeat so that they can catch up.

Repetition appears to be an important issue in primary schools and it can be seen that two-thirds of Standard 6 pupils in Kenya have spent one or more extra years in the primary education system. This has major resource implications, and causes internal inefficiency.

A major problem in Kenya related to repetition is that there are limited places in secondary schools available to accommodate those who complete the primary level. There were 16,958 primary schools and 2,586 secondary schools in 1999, and the transition rate from primary to secondary has generally been below 50 percent. Because of this, the average score achieved by pupils on the Kenya Certificate of Primary Education (KCPE) Examination is important because it is used to select pupils for secondary schools and preferably (for parents) into a high-status national or provincial secondary school. It should also be noted that there are also major pressures on primary schools because they are ranked according to the examination scores of their pupils – and these results are then published each year in an official 'merit list'.

Policy Suggestion 3.12: The Ministry should undertake a detailed investigation into the practice of grade repetition in Kenya in order to determine whether the extra year(s) of schooling being received by some two-thirds of the Standard 6 pupils can be justified on either educational or economic grounds.

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What were the characteristics of Standard 6 teachers?

Several important characteristics of teachers were also measured. These concerned the age of teachers, sex of teachers, academic qualifications, professional qualifications, years of teacher experience, and number of in-service courses. The results of the analysis of these variables have been reported in *Table 3.3*.

a) Age of teachers

The average age of Standard 6 teachers in the different provinces and at the national level has been presented as the first variable in *Table 3.3*. The average age of all Standard 6 teachers in Kenya, in the sample, was 36.4 years. The average age did not vary a great deal from the national mean, except for the North Eastern Province, where the mean was 26.9 years. This could be explained by the fact that it was not until the beginning of the 1990s that this province started producing teachers of its own (that is, from within the province). In earlier years, when education had not taken root in the province, teachers had to be posted from other provinces.

b) Sex of teachers

The gender distribution of Standard 6 teachers in Kenya was 43.6 percent female and 56.4 male. There was considerable variation among provinces in gender distribution. For example, in Nairobi 86.1 percent of Standard 6 teachers were female, while in the North Eastern Province the figure was only 28.3 percent. The Coast and Eastern Provinces also had rather low percentages of women teachers of 34.3 and 33.3 percent, respectively. These differences represent major variations and certainly warrant a review of Ministry policy in this area. The impact of having few women teachers can also be seen in terms of having very few or no role models for girls, and consequently having lower female participation rates in the higher grades of schooling.

Policy Suggestion 3.13: The Ministry and Provincial Offices of Education should take action to have a more balanced distribution of female and male teachers in primary schools.

c) Years of academic education

The teachers were asked to record the years (excluding grade repetition) of academic education (for example, primary, secondary and post-secondary education) that they had received. From *Table 3.3*, it may be seen that the average Standard 6 pupil, in Kenya, had a teacher who had received 12.9 years of academic education. This implied that the average Standard 6 pupil had a teacher who had completed 7 years of primary education and 4 years of secondary education. The younger teachers, especially those aged below thirty years, had gone through 8 years of primary education and 4 years of secondary education. The excess over the 12 years suggests that some of the teachers had received 'A' level education and perhaps some post-secondary education. There was little variation among the provinces.

d) Years of teacher training

In Kenya, pre-service teacher training lasts two years. Some teachers have received training through a three-year in-service programme, which comprises residential and distance education. For a teacher to be certified as a qualified primary-school teacher, he or she has to have undergone one of the two programmes. The figures in *Table 3.3* show the national average number of years of teacher training was 2.0 years. There was very little variation among provinces in the number of years of teacher training.

Table 3.3. The means, percentages, and sampling errors for selected teacher background characteristics

Province	Age (years)		Sex (female)		Academic education (years)		Teacher training (years)		Teacher experience (years)		In-service courses (number)	
	Mean	SE	%	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Coast	34.8	1.54	34.3	10.95	12.4	0.19	1.9	0.08	11.7	1.39	2.9	0.78
Central	39.9	1.42	44.8	9.76	12.6	0.34	1.9	0.13	15.9	1.49	3.2	1.12
Eastern	37.9	1.46	33.3	8.39	12.9	0.19	2.1	0.05	13.4	1.56	2.9	0.97
Nairobi	35.1	1.41	86.1	7.48	12.8	0.30	1.9	0.18	12.5	1.11	3.6	0.75
Rift Valley	33.7	1.16	48.3	10.56	13.4	0.25	2.1	0.05	9.4	1.20	2.4	0.97
Western	37.5	2.18	38.9	11.79	12.9	0.32	2.1	0.09	13.6	1.92	4.2	1.22
Nyanza	35.3	1.78	48.4	12.41	12.9	0.25	2.1	0.07	12.5	1.63	5.1	1.58
North Eastern	26.9	1.21	28.3	15.43	13.0	0.26	1.9	0.18	4.7	1.08	0.9	0.50
Kenya	**36.4**	**0.63**	**43.6**	**4.34**	**12.9**	**0.11**	**2.0**	**0.03**	**12.6**	**0.62**	**3.4**	**0.48**

e) Years of teaching experience

The average number of years of teaching experience for Standard 6 teachers has been listed in *Table 3.3*. The national average of years of experience for Standard 6 teachers in Kenya was 12.6 years. There was significant variation among the provinces. The North Eastern Province had a mean of 4.7 years, Rift Valley Province a mean of 9.4 years of teaching experience, while Central Province had a mean of 15.9 years, and Western Province had a mean of 13.6 years. The means for the other provinces were around 11 to 12 years. As expected, the average number of years of teaching experience followed a similar pattern across provinces as the average age of teachers. For example, the North Eastern and Rift Valley Provinces, which had the lowest means for teaching experience, also had the youngest teachers (26.9 years and 33.7 years, respectively) compared to other provinces. These figures clearly indicate major inequities in the distribution of experienced teachers.

Policy Suggestion 3.14: The Teachers Service Commission should attempt to equalize the years of experience of teachers across provinces when allocating new teachers or transferring experienced teachers.

f) Number of in-service courses attended

The teachers were asked to give the number of in-service courses they had attended during their teaching careers. The average for the whole country was 3.4 but in the North Eastern Province the mean was 0.9. There is no clear policy on the regularity of in-service courses and the mechanisms of delivery. It should be noted that when answering the question it is possible that some teachers might have indicated that they had attended an in-service course while, in actual fact, it was the in-service course for initial teacher training that they had attended.

Policy Suggestion 3.15: It would be desirable for the Ministry to revisit the current policy of in-service training programmes and revise it so that all teachers in all provinces receive regular updating through such programmes.

What were the teaching conditions in primary schools?

In all countries that participated in SACMEQ's initial project there was a great deal of interest in the resources available to teachers for their teaching and the availability of basic supplies of classroom furniture. In order to assess these two important dimensions, Standard 6 teachers were given a checklist of items that they used in order to indicate the availability of a range of classroom resources. The checklist contained eight items covering teaching materials and five items covering classroom furniture. These items, and the percentages of Standard 6 pupils in classrooms with each of these items, have been listed in *Table 3.4*.

a) Teaching materials and classroom furniture

Several surprising results emerged from the analyses associated with teaching materials and classroom furniture. It was expected that basic furniture, such as a usable blackboard, and a teacher's table and chair would be found in all Standard 6 classrooms as well as basic resources such as chalk, wall charts, and an English dictionary. However, only around one third of Standard 6 pupils were in classrooms with a map of Africa, a world map, or an atlas. In addition, only around half of the Standard 6 pupils were in classrooms with a wall chart or an English dictionary.

Only 5.7 percent of Standard 6 pupils were in classrooms that had a bookshelf, while a very low 34.0 percent were in classrooms with a classroom library or book corner. This situation raises concern as a number of studies have shown that increasing pupil access to books by making them closer to ordinary daily classroom activities is a key factor in improving pupil literacy levels (Postlethwaite and Ross, 1992). The general picture presented by the information in *Table 3.4* showed major inadequacies in classroom supplies across the nation. An immediate investigation should be launched in this area in order to seek ways by which this situation can be rectified.

Table 3.4. Percentage of Grade 6 pupils in classrooms with selected teaching materials and classroom furniture

Item	Percentage with item	SE
Teaching materials		
Chalk	97.9	1.06
A wall chart of any kind	54.9	4.22
A map of Kenya	47.7	4.21
A map of Africa	39.8	4.17
A world map	36.5	4.13
A classroom library or book corner	34.0	4.14
An atlas	39.8	4.16
An English dictionary	54.0	4.18
Classroom furniture		
A usable chalk board	95.7	2.07
A cupboard	13.5	2.67
One or more bookshelves	5.7	1.51
A teacher's table	46.1	4.32
A teacher's chair	55.4	4.32

The teacher responses concerning resources were combined to form two scales: a Teaching Materials Index (constructed by adding up the number of teaching material items that each teacher reported out of a total of eight items) and a Classroom Furniture Index (constructed by adding up the number of items of classroom furniture that each teacher reported out of a total of five items). The mean score for these indices across the provinces and nationally, have been reported in *Table 3.5.*

The average for Kenya was 4.0 for the Index of Teaching Materials and 2.2 for the Index of Classroom Furniture. For the Index of Teaching Materials, almost all provinces had a similar average, ranging from 3.3 to 4.7, except for Nairobi, which had a mean of 5.7. The values of the Index of Classroom Furniture were low for all provinces – except for Nairobi where the value of 4.0 was around double the value of most other provinces. The national means for both indices were very low – being around one half of the number of required items.

Table 3.5. Means and sampling errors for the Index of Teaching Materials and the Index of Classroom Furniture

Province	Index of Teaching Materials (8 items)		Index of Classroom Furniture (5 items)	
	Mean	SE	Mean	SE
Coast	3.8	0.51	2.5	0.37
Central	3.8	0.51	2.3	0.30
Eastern	3.3	0.43	2.1	0.17
Nairobi	5.7	0.40	4.0	0.24
Rift Valley	4.4	0.42	2.1	0.31
Western	3.7	0.50	1.9	0.21
Nyanza	4.7	0.56	1.9	0.19
North Eastern	3.9	0.48	2.2	0.38
Kenya	**4.0**	**0.20**	**2.2**	**0.11**

Policy Suggestion 3.16: As a matter of urgency, the Ministry should instigate a census of all primary schools in order to ascertain the levels of teaching materials and classroom furniture, and then take steps to ensure that all of these basic supplies are made available to all schools.

b) Pupils' books and materials in the classrooms

Without basic learning materials such as textbooks, exercise books, notebooks, and pencils or pens, it is very difficult for pupils to learn. Information has been presented in *Table 3.6* and *Table 3.7* concerning the availability of these materials.

In *Table 3.6*, it may be seen that in Kenya as a whole 75.7 percent of the Standard 6 pupils *lacked* their own English reader/English textbook. Western Province had a higher percentage (84.6 percent) of children lacking the English textbook than all the other provinces, while Nairobi had the lowest at 42.9 percent. Fewer pupils lacked exercise books (5.9 percent) than notebooks (27.2 percent). An exercise book was defined as 'a book for writing that is marked by the teacher' and a notebook as 'a book that is used for writing and is not marked by the teacher'. In the Coast Province, for example, 49.5 percent of the children reported having no notebook and 5.9 percent did not have an exercise book. The cost of exercise books is lower than that of notebooks, and in many cases notebooks are a luxury.

The figures in *Table 3.7* are disturbing – especially since one would expect all children in Standard 6 to have a pencil, ruler, eraser/rubber, and pen. Around 10 percent of children did not have a pencil, 22.0 percent did not have a ruler, 31.7 percent did not have an eraser, and 10.5 percent did not have a pen. There were substantial variations among provinces in the provision of these basic materials required for writing. In the Coast and Eastern Provinces the percentages of children lacking a pencil were 13.6 and 12.4 percent, respectively. In Nairobi 4.3 and 8.8 percent of the children lacked pencil and a pen, and in the North Eastern Province 6.4 and 10.5 percent did not have a pencil and pen.

Table 3.6. Percentage of pupils reporting *lack* of basic learning materials and equipment (reader/textbook, exercise book, notebook)

Province	Percentage of pupils reporting *lack* of items					
	Reader/textbook		Exercise book		Notebook	
	%	SE	%	SE	%	SE
Coast	76.2	5.30	5.9	3.01	49.5	7.96
Central	76.1	4.33	4.9	2.35	20.9	4.31
Eastern	79.0	4.62	9.9	4.68	20.2	4.65
Nairobi	42.9	5.92	3.4	1.27	28.9	3.46
Rift Valley	72.8	5.57	7.9	5.41	22.2	5.29
Western	84.6	4.29	3.7	1.13	31.4	7.01
Nyanza	73.7	5.12	2.4	1.33	35.9	7.56
North Eastern	77.5	4.48	6.7	0.67	32.2	9.06
Kenya	**75.7**	**2.04**	**5.9**	**1.56**	**27.2**	**2.38**

Note: The values reported for Reader and Textbook refer to the total percentage of pupils who (i) did not have the item mentioned, (ii) shared the item, or (iii) only the teacher had the item.

In general, the results in *Table 3.6 and Table 3.7* indicated a deficiency in provision of basic teaching/learning materials and notable variations in provision among provinces. This situation, coupled with the overall lack of basic supplies described in *Table 3.6* posed many questions concerning how teachers are actually managing the learning process in the classroom. Of great concern in these results are the disparities among provinces. The policy on provision of these items needs to be reviewed to ensure that all schools are appropriately resourced and that all children have access to basic teaching/learning materials.

Policy Suggestion 3.17: As a matter of urgency, the Ministry should undertake a census of the provision of basic supplies such as readers and other important learning materials that exist in the primary schools. This review should be used to establish a priority list for assisting provinces that are in most need.

Table 3.7. Percentage of pupils reporting *lack* of basic learning materials and equipment (pencil, ruler, eraser, pen)

Province	Percentage of pupils reporting *lack* of items							
	Pencil		Ruler		Eraser		Pen	
	%	SE	%	SE	%	SE	%	SE
Coast	13.6	3.13	22.4	3.84	40.4	4.03	12.4	2.89
Central	5.9	2.19	12.5	2.69	29.1	4.99	9.2	3.09
Eastern	12.4	4.72	24.2	4.81	34.9	4.87	14.3	4.67
Nairobi	4.3	1.76	12.9	2.78	21.2	3.95	8.8	3.16
Rift Valley	9.8	5.44	20.5	5.10	26.5	5.23	9.2	5.40
Western	8.5	1.37	28.4	4.13	40.2	4.97	11.4	2.44
Nyanza	11.9	4.59	26.6	4.98	29.2	6.01	8.4	4.40
North Eastern	6.4	2.07	23.1	8.48	39.9	8.86	10.5	4.61
Kenya	**9.9**	**1.76**	**22.0**	**1.85**	**31.7**	**2.15**	**10.5**	**1.81**

What aspects of the teaching function designed to improve the quality of education were in place?

A number of variables were examined with respect to this important aspect of the educational environment. Most of them were related to teaching practices that were known from previous research to influence pupil learning, or with the teachers' perceptions of the inspectors and the factors that were known to be related to job satisfaction. Four issues were examined: frequency of testing pupils, regularity of meetings with parents, perceptions of the professional performance of the inspectorate, and perceptions of what teachers considered to be important influences on job satisfaction. The results of the analyses have been presented in *Tables 3.8* to *3.12*.

a) Frequency of testing

The final two sets of figures in *Table 3.8* showed that 77.7 percent of Standard 6 pupils had teachers who stated that they gave their pupils a written test in reading at least two or three times per month or more frequently. There were 16.6 percent of pupils whose teachers said that they gave tests two or three times a term. Only 1.4 percent were given a test once per term and 4.2 per cent did not get tests at all.

The majority of the children (59.8 percent) were given a written test once or more per week. These results confirm the well-known examination-oriented system in Kenya, which has led to a lot of drill and rote learning.

b) Meetings with parents

Postlethwaite and Ross (1992) showed that, in many countries, the more that the school head and teachers had contact with parents, the more effective the school was in promoting the reading achievement of pupils. That is, schools where school heads and teachers had contact with parents scored better than could be expected after taking due account of the socio-economic background of their pupils. The results concerning the frequency of teacher meetings for Standard 6 pupils in Kenya have been presented in *Table 3.9*. The mode for Kenya was once per term, but 30.7 percent of teachers met parents either only once per year or never. This result was very low and should be addressed immediately. The lack of regular meetings was particularly notable in the Coast and Rift Valley Provinces.

Policy Suggestion 3.18: The Ministry should meet with teacher educators to ensure that the importance of teachers meeting with parents is stressed in pre- and in-service training courses. Special attention should be given to this feature in the Coast and Rift Valley Provinces.

Table 3.8. Percentages and sampling errors for the frequency of giving a written test to pupils

Province	No test		Once a term		Two or three times per term		Two or three times per month		Once or more per week	
	%	SE	%	SE	%	SE	%	SE	%	SE
Coast	16.8	8.96	5.8	5.63	14.1	7.77	28.8	9.95	34.6	10.64
Central	18.8	9.07	0.0	0.00	10.4	5.94	14.8	6.46	56.1	10.58
Eastern	0.0	0.00	3.2	2.51	19.5	6.70	19.5	6.41	57.9	8.76
Nairobi	4.3	3.99	5.3	3.68	19.1	5.67	23.4	7.45	47.9	8.93
Rift Valley	0.3	0.83	1.4	1.35	15.4	8.65	21.4	9.38	61.6	10.66
Western	0.0	0.00	0.0	0.00	24.5	10.28	14.0	7.87	61.5	11.01
Nyanza	0.0	0.00	0.0	0.00	14.7	8.30	13.0	6.62	72.3	10.04
North Eastern	0.0	0.00	0.0	0.00	19.0	8.39	28.6	15.02	52.4	13.62
Kenya	**4.2**	**1.69**	**1.4**	**0.67**	**16.6**	**3.26**	**17.9**	**3.17**	**59.8**	**4.19**

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Table 3.9. Percentages and sampling errors for frequency of teacher meetings with parents

Province	Never		Once per year		Once per term		Once (+) per month	
	%	SE	%	SE	%	SE	%	SE
Coast	33.2	11.23	13.2	7.60	45.3	11.59	8.4	5.82
Central	14.8	7.12	12.9	6.05	67.6	8.85	4.7	4.80
Eastern	15.2	5.98	14.1	6.47	58.4	8.72	12.3	5.67
Nairobi	6.4	4.42	14.9	7.05	63.8	9.89	14.9	5.85
Rift Valley	23.0	9.52	14.7	7.00	57.9	10.34	4.3	4.35
Western	18.2	8.49	10.8	7.46	52.7	11.38	18.2	7.89
Nyanza	12.0	6.95	12.3	6.54	67.2	10.29	8.5	6.01
North Eastern	9.5	6.66	14.3	8.72	52.4	13.02	23.8	10.18
Kenya	**17.5**	**3.28**	**13.2**	**2.73**	**59.9**	**4.09**	**9.3**	**2.26**

c) Teachers' perception of the role of inspectors

The role of the inspectors in Kenya is under scrutiny – especially as there are two parallel institutions at headquarters and local level: the Inspectorate and advisory services. Previously an Inspector of Schools played the dual role of inspector and adviser. The teachers in this study were given an opportunity to describe their perceptions of the impact of the inspectors on their work. Their responses have been tabulated in *Table 3.10.*

The teachers' responses were tabulated under three broad categories that described the main dimensions of the work carried out by inspectors: 'Pedagogical role', 'Critical versus advisory role', and 'Professional development role'. The results showed that teachers perceived inspectors as performing their pedagogical role well. For example, the following three areas were ranked very highly in this category: suggest improved teaching methods (93.9 percent), bring new ideas (91.0 percent), and clarify educational objectives (87.2 percent). A rather worrying figure was the 24.3 percent indicating that inspectors came to criticize the work of teachers.

The teachers were not very satisfied with the professional development role of inspectors. Just over 80 percent of the teachers indicated that the inspectors encouraged professional contacts with other teachers, and only 55.4 percent of teachers thought the inspectors played a role in providing information for teachers' self-development. The figures in the table should be reviewed by the Ministry as part of the overall investigation of the role and functions of the Inspectorate within the ongoing reform process of this section of the Ministry.

Table 3.10. Teachers' perceptions of the role of the Inspectorate

Aspect of the role	Percentage of teachers agreeing	
	%	SE
Pedagogical role		
Bring new ideas	91.0	2.18
Clarify educational objectives	87.2	2.84
Recommend new teaching materials	80.7	3.47
Contribution to classroom teaching	76.8	3.44
Explain curriculum	77.8	3.68
Suggest improved teaching methods	93.9	1.99
Critical versus advisory role		
Comes to criticize	24.3	3.74
Comes to advise	95.1	1.76
Professional development role		
Encourage professional contacts with other teachers	81.1	3.43
Provide information for teacher self-development	55.4	4.16

d) Sources of teacher satisfaction

The motivation of teachers is critical for any programme designed to improve the quality of education. In the SACMEQ countries there has been considerable interest in this issue – especially concerning the factors that contribute most to job satisfaction. It is widely acknowledged that satisfied teachers will tend to work harder for the benefit of the pupils and are less likely to leave the teaching profession.

Teachers in this study were given an opportunity to respond to 13 possible reasons for satisfaction with their jobs. The 13 reasons have been grouped under five categories in *Table 3.11:* living conditions, school facilities/equipment, relationships with others, career advancement, and educational outcomes of pupils.

Under 'Living conditions', the most important factor was travel distance to school (88.5 percent). This factor was slightly more important for teachers than was the availability and quality of teacher housing.

The quality of classroom supplies was perceived as very important (94.2 percent), in fact more important than the quality of school buildings and the quality of furniture. This result was congruent with earlier results that indicated a lack of basic supplies in many Kenyan classrooms. The category of relationships with others and career advancement were also perceived as quite important. However, the issue of expanded opportunity for promotion ranked rather low in comparison to others, at 82.5 percent. The educational outcomes of pupils ranked second (92.4 percent) to the quality of classroom supplies. It was probably the case that the teachers saw a clear link between the quality of classroom supplies and the performance of their pupils. This does not appear strange in a situation where the performance in the examination for the KCPE is almost the one single factor used by the Ministry and the public in determining what is a 'good school' and who is a 'good teacher'.

Table 3.11. Percentage and sampling errors for sources of teacher satisfaction

Source	**Percentage of teachers indicating reason as 'very important'**	
	%	SE
Living conditions		
Travel distance to school	88.5	2.62
Availability of teacher housing	74.9	3.47
Quality of teacher housing	73.3	3.85
School facilities/equipment		
Quality of school buildings	57.5	4.26
Quality of classroom furniture	71.3	3.82
Quality of classroom supplies	94.2	1.80
Relationships with others		
Quality of school manpower and administration	90.5	2.45
Amicable working relations with other teachers	91.7	2.26
Good relations with community	84.6	3.26
Career advancement		
Expanded opportunities for promotion	82.5	3.32
Opportunities for professional development	89.7	2.34
Level of teacher salary	91.2	2.18
Educational outcomes of pupils		
Seeing pupils learn	92.4	1.78

When teachers had completed the checklist of 13 reasons for job satisfaction, they were asked to select the *one* reason that was the 'most important' for them. The results of this selection have been listed in *Table 3.12*. In this table, the percentages of teachers selecting the five reasons with the highest ratings have been presented. Also in this table, the region in which each of these reasons had the highest rating has been listed.

It is clear from the results in *Table 3.12* that 'teacher salary' was most important to the job satisfaction of Standard 6 teachers in Kenya (23.4 percent). The other two important factors that received high ratings were 'quality of school management and administration' (18.4 percent) and 'seeing pupils learn' (16.7 percent). The results indicated that, other than their salaries, of great concern to teachers were the type of management in the school, their pupils, professional development, and the provision of classroom supplies.

Some of the provinces were quite different in their ratings of the most important factor related to job satisfaction for teachers and this suggested that the issue of teacher motivation needs to be addressed differently across the provinces.

Table 3.12. Percentage and sampling errors for five reasons rated as 'most important' in a list of 13 reasons dealing with teacher job satisfaction

Five most important reasons	**Percentage rating as 'most important'**		**Division with highest frequency**
	%	SE	
Level of teacher salary	24.5	3.45	Rift Valley (42.4%)
Seeing pupils learn	17.4	3.06	Rift Valley (27.3%)
Opportunities for professional development	11.6	2.59	North Eastern (20.0%)
Quality of classroom supplies	16.8	3.20	Nyanza (26.1%)
Quality of school management/administration	19.2	3.27	Nyanza (40.3%)

What was the general condition of school buildings?

An assessment of the general condition of school buildings in Kenya was obtained by examining the responses to questions asked of school heads concerning the state of the buildings (from being in order, to needing different amounts of repair, to needing to be completely rebuilt). Another indicator of the general condition of the buildings was the amount of space per pupil in square metres. Finally, the provision of toilets was a matter of general concern in many SACMEQ countries. The headteachers' responses concerning these three areas have been listed in *Table 3.13*.

a) Repair status

The school head was asked to state the condition of his or her school building on a five-point scale with the following values: 5 = in good condition; 4 = some classrooms need minor repairs; 3 = most or all classrooms need minor repairs; 2 = some classrooms need major repairs; and, 1 = school needs complete rebuilding. This variable was re-coded so that it was possible to calculate the percentage of Standard 6 pupils in schools where the school head perceived that these schools were either 'in need of major repair' or 'needed complete rebuilding'. These percentages have been listed in *Table 3.13*.

The analysis revealed that around half of the Standard 6 pupils in Kenya were in schools that were perceived by the school heads to be in need of major repairs or rebuilding. There were wide variations among provinces, ranging from 25.4 and 31.6 percent in Central and Nairobi, respectively, to 80.5 and 73.6 percent in Nyanza and Western Provinces, respectively.

Table 3.13. The means and sampling errors for selected school building characteristics

Province	Repair status		Classroom space		Toilet provision	
	Mean	SE	Mean	SE	Mean	SE
Coast	34.6	11.09	2.1	0.71	73.8	9.03
Central	25.4	9.75	1.5	0.15	30.5	1.89
Eastern	35.4	9.02	1.7	0.18	37.6	4.29
Nairobi	31.6	10.62	2.2	0.69	36.2	5.49
Rift Valley	45.5	10.66	1.0	0.14	45.5	4.74
Western	73.6	10.74	1.8	0.69	57.9	7.52
Nyanza	80.5	8.64	1.0	0.13	66.8	5.08
North Eastern	64.9	13.87	0.7	0.15	91.7	17.48
Kenya	**49.5**	**4.15**	**1.4**	**0.12**	**55.0**	**6.94**

These figures indicated that school buildings in Kenya are in a very poor condition and that long-term strategies need to be put in place to rectify this situation. School buildings need to be kept in good repair both for maintaining adequate safety standards and for ensuring that equipment within buildings is protected.

Policy Suggestion 3.19: The Ministry should undertake a census of the condition of school buildings and then assess the extent to which a staged programme of re-building and repairs can be carried out.

b) Classroom space

The value for this variable was obtained by dividing the whole of the internal area of all classrooms by the total number of pupils enrolled in the school. The national average for classroom space was 1.4, which conformed to the Ministry norm. There was significant variation among provinces and Nairobi had a mean of 2.2, while North Eastern had 0.7 and Rift Valley and Nyanza had 1.0. These three latter provinces did not meet the Ministry's norm of 1.4 square metres per pupil.

c) Toilet provision

At the national level, Standard 6 pupils attended schools where there was an average of 55 pupils for one toilet/latrine. This ratio varied from 30.5 in Central Province to 91.7 in North Eastern Province. Availability of toilet facilities has been seen to have a great impact on attendance at school, especially for girls. Even where facilities are available, in many cases they have been said to be 'unfriendly' to girls. The issue of the pupil/toilet ratio is therefore important and needs to be addressed in all provinces, although the problem appears to be more acute in some provinces such as Coast and North Eastern. There were major differences in toilet provision among the provinces.

Policy Suggestion 3.20: The Ministry should, as a matter of urgency, undertake a census of the availability and condition of school toilet facilities, and then use this information to improve these facilities, especially for girls.

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d) General school facilities

Table 3.14. Percentages and sampling errors for pupils in schools with selected facilities

Facility	Percentage with facility	
	%	SE
School buildings		
School library	41.5	4.33
School hall	13.1	2.76
Staff room	91.6	2.32
School head's office	81.9	2.97
School secretary's office	18.6	2.99
Storeroom	56.5	4.29
Cafeteria	8.9	2.27
School grounds		
Sports area	67.1	4.30
Playground	91.6	2.53
School garden	80.6	3.63
General services		
Piped water	31.7	3.70
Well or bore-hole	45.0	4.32
Electricity	15.1	2.72
Telephone	10.8	2.38
Equipment		
Fax machine	0.5	0.35
Typewriter	27.5	3.70
Duplicator	19.9	3.11
Radio	66.4	4.31
Tape recorder	10.9	2.38
Overhead projector	0.3	0.30
TV	3.2	1.74
Film projector	0.4	0.27
Video-cassette recorder	1.3	0.77
Photocopier	1.1	0.70
Computer	1.2	0.77

From *Table 3.14* it is clear that many of the schools lacked general services such as piped water, electricity and telephone. With the exception of radio, most of the equipment items were lacking in most schools. In a situation where, until very recently, there have been radio broadcasts to schools, one third of Standard 6 pupils had no access to radio lessons.

It is also a matter of concern that with pupils being so poorly resourced in terms of textbooks and other reading materials, only one in five Standard 6 pupils attended schools that had a duplicator. This is an important piece of equipment – especially where teachers have to improvise because of a lack of textbooks.

Modern technological equipment, such as film projectors, tape recorders, TV, video-cassette recorders, photocopiers, overhead projectors and computers were almost non-existent in most Kenyan schools. This is worthy of note especially as much enthusiasm is currently being expressed in Kenya about the introduction of computer education, even at the primary-school level.

Policy Suggestion 3.21: The Ministry should gather information concerning the availability of school equipment by undertaking a school census and then use this to establish a priority list for supplying schools in greatest need.

What level of access did pupils have to books?

Elley (1992) showed that children had much higher literacy skills when they were able to read books and when they had a wide range of books available for them to read. In this study, several questions were asked about the availability of a classroom library, a school library, and the arrangements for allowing pupils to borrow books from these libraries. The responses to these questions have been summarized in *Table 3.15.*

Table 3.15. The percentages and sampling errors for pupils' level of access to books

Province	Library availability				Pupils permitted to borrow books	
	Classroom		School			
	%	SE	%	SE	%	SE
Coast	13.4	7.18	10.1	7.15	0.00	--
Central	36.6	9.68	38.0	10.31	32.4	9.79
Eastern	24.8	7.82	26.6	8.42	16.9	7.19
Nairobi	42.2	9.61	68.1	11.67	55.1	11.99
Rift Valley	44.9	10.73	41.4	10.70	31.5	10.04
Western	30.7	10.79	41.9	11.97	18.8	9.24
Nyanza	35.7	11.31	65.2	11.59	46.5	12.43
North Eastern	41.3	13.32	52.3	15.13	45.9	14.88
Kenya	**34.0**	**4.14**	**41.5**	**4.33**	**28.7**	**4.09**

a) Classroom library

The Standard 6 teachers in this study were asked about the number of books in the classroom library. If there was no classroom library, the teacher was directed to record zero books. In *Table 3.15* the first column presents the percentage of Standard 6 pupils in classrooms with a library. Around one third of all Standard 6 pupils were in classrooms with a classroom library – which also implied that two thirds were in classrooms that had no library. There was wide variation among the provinces. In the Coast Province only 13.4 percent of the pupils were in classrooms with libraries and in the Rift Valley the figure was much higher, at 44.9 percent.

b) School library

Around 60 percent of Standard 6 pupils in Kenya were in schools that had no school library. This is a major concern, because, as indicated earlier in *Table 3.6*, 75.7 percent of Standard 6 pupils did not have their own reader/English textbook.

c) Borrowing books

Even though schools may have classroom and school libraries, it often occurs that the pupils are not allowed to borrow books in order to take them home to read. Thus a question was asked of the headteachers about the issue of borrowing books from the school library. Only 28.7 of Standard 6 pupils were in schools where they were allowed to borrow books from the library. In the Coast Province no pupil was allowed to borrow books and Nairobi had the highest percentage (55.1 percent) of children in schools where they could borrow library books.

Policy Suggestion 3.22: There is a disturbing dearth of reading materials in Kenyan primary schools. Given the known relationship between the availability of books and pupil performance, it is incumbent on the Ministry to remedy the situation regarding classroom libraries, school libraries, being able to borrow books, and the existence of sufficient English readers in schools.

Policy Suggestion 3.23: The Ministry, through the Inspectorate and relevant departments, should ensure effective utilization of textbooks and other readers supplied to schools through various projects.

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Conclusion

This chapter was designed to provide the reader with some examples of baseline data for inputs to primary schools in Kenya. The examples covered the characteristics of Standard 6 pupils and their teachers, the general condition of school buildings, and pupil access to books. The data were described as 'baseline' because they covered the essential features of the school system, and because they provided an initial cross-sectional description at one point of time. Educational planners in Kenya will be able to use these data to monitor the evolution of the primary education system and to assess the degree of change that has occurred in important educational indicators over time.

A number of policy suggestions were made on the basis of the analyses reported in this chapter. They included a policy suggestion on the minimum pupil age for starting school, which the government needs to address to make it realistic for pastoral communities. It was also proposed that action should be taken to address the issue of gender imbalances in pupil enrolments, which was found to be prevalent in some provinces. Further recommendations included addressing the issue of expanding the availability of books through mobile libraries, the sustainability of the school feeding programme, and continuing education for adults. The need to address the issues of learner absenteeism, grade repetition, homework and extra tuition was also emphasized.

Concerning teachers, it was recommended that the Ministry, in conjunction with the Teachers Service Commission, should address issues of gender disparities, distribution of teachers according to teaching experience, and in-service training for teachers.

The survey also revealed the need for the Ministry to look into the condition of facilities and the provision of basic supplies and furniture to schools. The availability of toilet facilities was found to be problematic, especially for girls at the upper-primary-school level. The provision of textbooks and other readers, especially in those provinces where these are lacking, was also recommended. Besides provision of teaching and learning materials, the effective use of those materials was found to be crucial. The importance of teachers meeting with parents was also emphasized.

The various policy suggestions listed in this chapter, when taken together, represent a major challenge for the Ministry of Education. Priorities will have to be made among the policy suggestions and, in some cases, it will be necessary to give supplementary assistance to selected provinces. Some of the policy suggestions involve little cost and others more cost. Similarly, some require little time to accomplish and others require more time. The question of prioritization will be re-examined in the final chapter of this report.

Chapter 4

How do the conditions of schooling in Kenya compare with the Ministry's own benchmark standards?

Introduction

In this chapter, the discussion of schooling conditions is extended beyond the descriptive account given in the previous chapter, to a comparative analysis in which these conditions are compared with reference to benchmark standards accepted for use by the Ministry of Education. This comparative analysis permits judgements to be made about key aspects of the educational environment in relation to the minimal levels of provision that the Ministry acknowledged as forming essential preconditions for successful learning. In those situations where no official benchmarks had been adopted by the Ministry, the approach taken was to apply standards that had been agreed to as being 'reasonable for the proper functioning of primary schools' by the SACMEQ National Research Co-ordinators.

In Kenya, the government does not provide funds for the provision of learning resources in primary schools. The parents and communities are expected to provide these through self-help initiatives. However, the government, with the assistance of donors, has been able to provide textbooks to Arid and Semi-Arid Land (ASAL) areas and Pockets of Poverty (POP) areas, and also pays the teachers' salaries. It follows, then, that the schools that are found in more economically endowed areas are more likely to have the required learning and teaching resources. The construction of classrooms and provision of school furniture is also the responsibility of parents and communities, and therefore the levels of provision in schools may be a reflection of the socio-economic status of the school catchment areas.

Though in most cases benchmark standards exist, it has not always been possible for the Ministry to enforce them. This is partly due to the fact that the government cannot insist on the standard of school facilities when it does not contribute towards their provision. The parents can only provide what they can afford and the only way the Ministry's standards can be met or maintained in many parts of the country is if the Ministry has financed them. It is important to note that many schools do not know the official benchmarks.

In conducting this study, it was not easy to locate the benchmark standards that had been agreed to by the Ministry. In some cases, it was not possible to locate any document on this matter at all – even though Ministry officials were positive that the benchmark standards did exist 'somewhere'. In some cases, no benchmarks existed. Even where benchmarks did exist, some of them had been established such a long time ago that they needed to be reviewed and revised to make them relevant for the current situation.

Policy Suggestion 4.1: The Ministry should update and publish comprehensive benchmarks for the educational environment that are deemed to be 'reasonable for the proper functioning of primary schools'.

Policy Suggestion 4.2: The Ministry should establish a special unit within the Inspectorate, specifically charged with the responsibility of establishing norms and standards.

Basic organizational features of schooling

The basic organizational features of schooling have always been of great interest to educational planners. These features must be managed properly in order to optimize the quality of the educational environment for all pupils. In the SACMEQ project, questions were asked of school heads about school total enrolment, class size, availability of classroom space for pupils, and staffing ratios. The results of the analysis of these questions and their linkages to the standards specified by the Ministry have been presented below.

a) Total school enrolment

The Education Act defines a school as "an institution in which not less than ten pupils receive regular instruction". This is the benchmark for the smallest school but there is no benchmark standard for the largest primary school. The SACMEQ researchers agreed that the school size for primary schools should be limited to 'not more than 960 pupils'. This viewpoint was based on the assumption that a 'manageable' school in the Kenyan context would be one with two classes at eight levels with a maximum of 60 pupils per class.

The percentages of Standard 6 pupils attending Kenyan primary schools that satisfied the total school enrolment benchmark of 960 pupils have been listed for the eight Kenyan provinces in the first column of *Table 4.1*. For Kenya overall, 94.1 percent of Standard 6 pupils were in schools that satisfied the benchmark. There was a large variation between Nairobi and other provinces. In Nairobi, only 56.6 percent of Standard 6 pupils were in schools that met the benchmark, while in the Western Province it was 100 percent, and 99.5 percent in the Eastern Province. The small percentage in Nairobi was not surprising because very few schools were constructed by the City Council in the 1980s and 1990s to accommodate the major population increases. As a result, existing schools have continued to expand in order to take in more pupils. The Kenya results were similar to those for Zimbabwe – where the Harare region was found to have the least number of Grade 6 pupils in schools that met the Ministry's benchmark on school size.

b) Class size

The Education Act states that no primary-school class should have more than 50 pupils. However, this number appeared to be in contradiction to the benchmark the Ministry has set for the pupil teacher ratio, that is 40:1 based on one teacher per class. The researchers agreed on a benchmark of 40 pupils per class. However, the researchers also noted that there should be flexibility concerning the number of pupils per class, depending on the classroom space, such that where possible, a class can accommodate up to 50 pupils without necessarily affecting the teacher effectiveness and learning achievement. The percentages of Standard 6 pupils in classes that satisfied the Ministry's class-size benchmark have been listed in *Table 4.1*. The percentage relating to the benchmark for Kenya overall was 63.6 percent. This result indicated that about 40 percent of the pupils in the country were in 'overcrowded' classrooms. The most affected province was Central, where only 47.7 percent of Standard 6 pupils were in classes that satisfied the benchmark.

Policy Suggestion 4.3: The Ministry should, through its annual school census, identify classes in schools where there are more than 50 pupils and then take the required measures to ensure that pupils are not in overcrowded classrooms. For example, in schools where many classes are too large the Ministry should encourage the multi-shift system in order to obtain the desired number of pupils per class.

Policy Suggestion 4.4: The Ministry, in areas where enrolments are low and class sizes are very small (for example, 10 or less), should consider introducing multigrade teaching, and support this by training teachers in this mode of delivery.

c) Classroom space

The Ministry's benchmark for classroom size is 7 by 8 metres, that is a total floor space of 56 square metres. Based on the benchmark class size of 40 pupils per class, the researchers calculated the benchmark for classroom space and set it at 1.4 square metres per pupil. This calculation was, however, probably an overestimate of the floor space per pupil because in many classrooms there could be items of furniture (for example, cupboard, bookshelf, teacher's table and chair, etc.) that take up space.

To calculate the classroom space per pupil, the total number of square metres available for classroom space in the school was divided by the total school enrolment. The percentage of Standard 6 pupils attending schools that satisfied the Ministry's classroom space benchmark has been listed in *Table 4.1*. The percentage reaching the benchmark for Kenya overall was 40.1 percent. The lowest percentage was in North Eastern Province, where only 16.8 percent of the Standard 6 pupils were attending schools that satisfied the Ministry's benchmark on classroom space. Nairobi had the highest percentage of Standard 6 pupils (60.2 percent) in schools that met the Ministry's benchmark on classroom space. This was an indication that though Nairobi schools continued to expand, efforts were being made to construct new classrooms rather than congesting the existing ones.

Policy Suggestion 4.5: The Ministry, in conjunction with the Provincial Educational Office in the North Eastern Province, should consult with the local communities in order to find a remedy for the space problem in schools.

d) Staffing ratio

The staffing ratio is often referred to as the pupil/teacher ratio. This measure should be distinguished from class size. In this study, the staffing ratio was calculated as the total number of pupils in the school divided by the total number of full-time equivalent teachers posted at that school. In a sense, this ratio reflects the 'wealth' of the school in terms of the provision of teachers. The benchmark set by the Ministry was 40 pupils per teacher.

The percentage of Standard 6 pupils in schools that satisfied the Ministry's staffing ratio benchmark has been presented as the final variable in Table 4.1. The value for Kenya overall was 79.5 percent. While 94.0 percent of Standard 6 pupils in Nairobi Province were in schools that satisfied the Ministry benchmark, North Eastern Province had only 47.9 percent.

Table 4.1. Percentages and sampling errors for benchmarks related to the basic organizational features of schooling

Province	School size		Class size		Classroom space		Staffing ratio	
	% le 960	SE	% le 40	SE	% le 1.40	SE	% le 40	SE
Coast	93.5	6.38	67.0	10.64	49.6	11.65	81.5	9.60
Central	87.1	7.99	47.7	10.07	45.9	10.97	78.1	10.54
Eastern	99.5	1.72	59.5	9.32	59.9	9.18	77.3	8.17
Nairobi	56.6	12.09	60.9	11.13	60.2	11.35	94.0	5.98
Rift Valley	96.1	3.65	51.6	10.69	30.1	9.25	86.1	9.19
Western	100.0	N/A	77.4	10.43	25.1	9.95	70.7	10.78
Nyanza	94.6	5.44	86.7	7.65	31.7	10.91	79.2	10.29
North Eastern	75.6	13.27	53.9	15.00	16.8	10.21	47.9	15.14
Kenya	**94.1**	**2.01**	**63.6**	**4.09**	**40.1**	**4.19**	**79.5**	**3.88**

Policy Suggestion 4.6: The Ministry should undertake a data collection in order to identify schools in North Eastern Province that have the poorest pupil/teacher ratio figures and then apply appropriate intervention measures to assist those schools.

Classroom furniture and supplies

Altogether, nine areas related to classroom furniture and supplies were employed in benchmark comparisons. Where there were no published benchmark levels, the SACMEQ National Research Co-ordinators agreed on levels – for example the benchmark for the supply of exercise books, notebooks and pencils. The results of these analyses are presented in *Tables 4.2* and *4.3*.

a) Classroom furniture

The benchmark for classroom furniture were sitting and writing places: one per pupil (one p.p.) and, chalkboard: one per class (one p.cl.).

Table 4.2. Percentages and sampling errors for benchmarks related to classroom furniture

Province	**Sitting places** (one p.p)		**Writing places** (one p.p)		**Chalkboard** (one p.cl)	
	%	SE	%	SE	%	SE
Coast	100.0	0.00	91.4	3.10	97.3	2.63
Central	99.2	0.48	79.1	5.85	90.5	5.61
Eastern	98.7	0.50	82.5	3.69	99.6	1.46
Nairobi	100.0	0.00	84.6	7.75	96.0	3.99
Rift Valley	99.7	0.52	90.9	1.99	89.7	8.10
Western	99.6	0.37	90.1	2.48	100.0	0.00
Nyanza	100.0	0.00	89.5	2.72	100.0	0.00
North Eastern	86.2	11.33	59.3	12.99	100.0	0.00
Kenya	**99.4**	**0.20**	**86.6**	**1.45**	**95.7**	**2.07**

The levels of provision for the three items in *Table 4.2* were generally satisfactory. For Kenya overall, almost 100 percent of Standard 6 pupils reported having their own sitting place, 86.6 percent had their own writing place, and 95.7 percent of Standard 6 pupils were in classrooms with a functional chalkboard. These results were generally quite pleasing – however, it was clear that a little extra effort needed to be made to ensure that all Grade 6 students were in classrooms that satisfied the 'writing places' benchmark.

61

Table 4.3. Percentages and sampling errors for benchmarks related to classroom supplies

Province	Exercise book (13 p.p)		Notebook (7 p.p.)		Pencils (one p.p.)		Rulers (one p.p.)		Erasers (one p.p.)		Ballpoint pen (one p.p.)	
	%	SE	%	SE	%	SE	%	SE	%	SE	%	SE
Coast	25.7	5.98	8.2	3.34	86.4	3.13	77.6	3.84	59.7	4.03	87.5	2.89
Central	30.7	4.83	16.9	3.63	94.1	2.19	87.5	2.69	70.8	4.99	90.8	3.09
Eastern	25.4	4.99	18.6	3.76	87.6	4.72	75.8	4.81	65.2	4.87	85.8	4.67
Nairobi	55.0	6.38	14.2	3.04	95.7	1.76	87.0	2.78	78.9	3.95	91.3	3.16
Rift Valley	24.9	6.76	22.7	4.29	90.2	5.44	79.5	5.10	73.5	5.23	90.8	5.40
Western	15.6	6.17	24.1	5.95	91.5	1.37	71.7	4.13	59.8	4.97	88.7	2.44
Nyanza	22.3	4.62	10.8	4.45	88.1	4.59	73.4	4.98	70.8	6.01	91.6	4.40
North Eastern	13.9	3.18	13.8	4.71	93.6	2.07	76.9	8.48	60.1	8.86	89.5	4.61
Kenya	**25.0**	**2.29**	**17.8**	**1.80**	**90.1**	**1.76**	**78.0**	**1.85**	**68.3**	**2.15**	**89.5**	**1.81**

Policy Suggestion 4.7: The Ministry should identify, through its data collection process, schools where Standard 6 pupils do not have their own writing place and then take action to address this need.

The lowest percentages for sitting and writing places were reported in North Eastern Province – 86.2 and 59.3 percent, respectively. These figures, taken in association with the earlier figures on classroom space, indicate that North Eastern Province needs to find ways in which to optimize the use of its classrooms.

Policy Suggestion 4.8: As part of the wider education reform, the Ministry should encourage communities in North Eastern Province to start shift systems in the lower sections of primary schools so as to ease classroom congestion.

b) Classroom supplies

The percentages of Standard 6 pupils in classrooms with supplies that satisfied the benchmark figures have been presented in *Table 4.3.* For four of the six items, the benchmark was one per pupil (one p.p). For exercise books, it was 13 per pupil (one for each subject) and for notebooks it was 7 per pupil respectively.

There were no established benchmarks in these areas and the research team derived these from 'common sense' judgements concerning the minimal levels of provision that would be acceptable in most schools. It must be pointed out that no attempt has been made to set the standards for the quality of the items. For instance, in many cases, pupils may report that they have a pencil, but the pencil might be so short that it is unusable.

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The items reported in *Table 4.3* are essential in a learning situation. Therefore, the low percentages of pupils meeting the benchmark standards was clearly unsatisfactory. For the most critical four items (exercise book, pencil, ruler, ballpoint pen), the percentage of Standard 6 pupils with these items ranged from 25.0 percent for exercise books to 90.1 percent for pencils. The lowest figures were for notebooks (17.8 percent).

The very low percentages of pupils reporting that they had the benchmark number of notebooks may have resulted because many pupils could not distinguish between a notebook (one that is not marked by the teacher) and an exercise book (one that the teacher marks). However, while notebooks may be necessary, they are not as critical as exercise books. The benchmark of seven per pupil might therefore be regarded as being too ambitious for a country like Kenya where parents have to provide all learning resources.

The variation among the provinces was relatively low for all items except exercise book and notebook, and North Eastern Province was disadvantaged for both of these. The 8-4-4 curriculum, which has been described as overloaded with 13 subjects at primary level, requires that every child should have at least 13 exercise books. Most households are not able to meet this requirement on top of other additional requirements such as notebooks, textbooks, school uniform, etc.

Policy Suggestion 4.9: The Kenya Institute of Education should undertake a study of the curriculum with a view to making it manageable, in terms of affordability for parents, by reducing the number of subjects while ensuring quality and relevance.

Academic and professional qualifications of teachers and school heads

In Kenya, the minimum academic qualifications required for entry into a primary teacher training programme have changed over the years. With the change in structure of the education system during the 1990s, the benchmark has changed from 11 years of education (7 plus 4) to 12 years of academic education (8 plus 4). The first group of students to enter teaching in the new system sat their secondary examination in 1989 and they will therefore have received 12 years of academic education. The teachers who went through the old system of education, which was changed in 1985, will have received 11 years of academic education. Furthermore, some disadvantaged areas, particularly the ASAL districts were in the past allowed to recruit candidates with 7 years of education to be trained at a lower professional level. These are however the minority. For the purposes of this report, the benchmark for the academic qualifications of teachers and school heads was based on 12 years of academic education.

Not all teachers have been trained in a pre-service teacher training programme. Some untrained teachers are selected to go for in-service training which takes place during school holidays and lasts about three years. These teachers sit an equivalent professional examination and are graded in the same way as those who undergo the pre-service course.

Teachers are also expected to be involved in some form of in-service courses to improve and update their professional skills. The Ministry has no benchmark on the number of in-service courses that a teacher should attend. It was decided to set the benchmark for this area at one in-service course.

a) Teacher qualifications

In *Table 4.4*, it can be seen that 96.9 percent of Standard 6 pupils were in schools where teachers satisfied the benchmark figure of at least 12 years of academic education. It is also encouraging to note that 97.2 percent of the pupils had teachers who met the benchmark on professional training. There were 92.1 percent of Standard 6 pupils in schools with school heads who met the benchmark standard on academic training and 97.6 percent who met the benchmark on professional training.

While the national average for those meeting the benchmark for in-service training was only 45.2 percent, Western and Nairobi Provinces had 65.3 percent and 64.9 percent, respectively. North Eastern and Rift Valley Provinces had the lowest figures at 20.2 percent and 31.3 percent, respectively. It is not clear why so few teachers in North Eastern and Rift Valley Provinces had received access to in-service.

Policy Suggestion 4.10: The Ministry should establish a benchmark on the number of in-service courses that teachers should be given and ensure that such courses are delivered on a regular and equitable basis.

Table 4.4. Percentage and sampling errors for benchmarks related to the qualifications of teachers and school heads

Province	Teachers						School heads			
	Academic qualifications		Professional qualifications		In-service courses		Academic qualifications		Professional qualifications	
	%	SE	%	SE	%	SE	%	SE	%	SE
Coast	98.8	3.02	96.2	3.69	59.3	11.42	85.9	8.27	93.6	6.22
Central	92.2	5.45	90.5	5.61	36.5	9.02	96.5	3.51	100.0	0.00
Eastern	99.8	0.60	99.6	1.46	41.5	9.10	95.7	3.43	100.0	0.00
Nairobi	94.6	4.15	86.3	7.19	64.9	7.98	86.9	7.31	100.0	0.00
Rift Valley	99.7	0.83	99.7	0.83	31.3	9.42	94.8	3.57	95.3	4.45
Western	89.7	7.42	96.4	3.16	65.3	10.36	94.3	5.77	100.0	0.00
Nyanza	100.0	0.00	100.0	0.00	52.7	12.43	81.6	9.00	94.6	5.44
North Eastern	100.0	0.00	87.3	9.17	20.2	10.00	96.9	3.10	100.0	0.00
Kenya	**96.9**	**1.36**	**97.2**	**1.13**	**45.2**	**4.18**	**92.1**	**2.28**	**97.6**	**1.50**

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Conclusion

This chapter has examined the conditions of schooling in Kenya based on comparisons with either benchmarks set down by the Ministry or benchmarks established by the SACMEQ National Research Co-ordinators. The approach taken was to analyze the range of indicators of the general conditions of schooling under three main headings: basic organizational features of schooling, classroom furniture and supplies, and the academic and professional qualifications of teachers and school heads.

Benchmarks are set by ministries so that the conditions for learning are as near optimal as possible given the economic situation of the country. As economic conditions change, so it is normal to change the benchmarks. It is clear that the benchmarks for Kenya should be reviewed and, if required, revised in Kenya. When reviewing the benchmarks it will be important to take into account the percentages of pupils in schools that did not meet the current benchmarks.

The four indicators under basic organizational features dealt with school size, class size, classroom space, and staffing ratio. Policies were suggested concerning these variables.

The indicators of classroom furniture and supplies dealt with the availability of sitting places, writing places, chalkboard, exercise books, notebooks, pencils, rulers, erasers and ballpoint pens. The situation relating to classroom furniture (sitting places, writing places, and chalkboard) was satisfactory for most provinces. The policy suggestion in this area focused on the problem of shortage of exercise books.

The indicators of the academic and professional qualifications of teachers and school heads summarized the formal and in-service education and training that they had received. In general, the situation concerning these human resources seemed quite satisfactory in Kenya. However, there was a nationwide deficit in terms of the amount of in-service training that had been received by teachers. North Eastern Province was particularly low on this benchmark.

The foregoing findings provided a 'mixed picture' for Kenya with respect to the provision of human resources, facilities and materials required for effective teaching and learning. Further detailed analyses of these results are clearly warranted in order to address areas of greatest need.

Chapter 5

Have educational inputs to primary schools been allocated in an equitable fashion?

Introduction

The educational goal of giving equality of educational opportunity to all pupils is an issue that goes beyond giving every child access to basic education. It also involves giving all of those pupils who are in school an equal opportunity to learn. One way to do this is to ensure that there is an equitable distribution of educational resources among all Kenyan schools. This is important if equity in access and participation are to be attained, and if parents are to be encouraged to send their children to any school because they know that all schools across the nation provide an equal chance for children to achieve to the best of their abilities.

In all school systems where the government wishes to take action to address the issue of equity, it is important to know the 'location' of differences or variations in resource inputs to schools. For example, it is important to know whether variations in resource inputs are more pronounced among provinces, or whether they are larger among schools within provinces. An answer to this type of question provides guidance as to which resources are distributed evenly or unevenly, and at the same time suggests the level at which decisions must be taken (national or provincial) in order to address any inequities that are observed.

In exploring questions of equity, it must be recognized that there is also a need to examine allocation patterns in association with actual levels of provision. Such information is necessary because it enables policy-makers to identify which resources and which schools require attention, and also to have some idea of the total amount of funding that may be needed in order to achieve a more equitable distribution of resources.

This chapter concentrates mainly on an examination of inequities in the distribution of educational resources and not upon absolute resource levels. Consequently the research results presented in the chapter should be examined in conjunction with the results from the two previous chapters.

Two approaches to the measurement of quality

a) Variation among provinces

A statistic called the coefficient of intra-class correlation (rho) may be used to divide the variation in resource inputs into two components: (a) among provinces, and (b) among schools within provinces. Rho can range from around zero to 1.00. When used in this way, rho is a ratio that measures the percentage of total variation among schools that can be attributed to variation among provinces. The residual figure measures the average variation among schools within the provinces.

To appreciate the meaning of rho, it is useful to consider two hypothetical school systems: System A and System B. In System A, resources are allocated equally, or nearly equally, to all schools and therefore when one calculates average resource levels for provinces in the system one finds that these are more or less the same – except perhaps for some minor chance deviations. For such a school system, the value of rho would be close to zero because the variation among provinces is associated with chance differences. That is, most of the variation among schools is due to variation among schools within provinces.

On the other hand, consider System B where, because of administrative decisions, historical factors, or geographical dispersion of social-class groups, there are large variations among the provinces. In this case the value of rho would be high. Most of the variation among schools in this case would be due to variations among provinces and there would be little variation among schools within provinces. For such a school system the value of rho would be high (perhaps approaching unity) because most of the variation among schools could be accounted for by variation among provinces.

The above examples describe two extremes that serve to illustrate the interpretation of rho. When using rho in policy discussions it is common practice to multiply the values by 100 in order to present a more readable discussion about 'percentage of variance'. For example, a rho of 0.20 means that 80 percent of the differences are among schools within provinces and 20 percent among provinces. In contrast, a rho of 0.80 would indicate that 80 percent of the differences among schools were associated with variation among provinces and 20 percent among schools within provinces.

b) Variation among schools within provinces

It is also possible to quantify the differences among schools within a particular province by making a comparison with the variation among schools at the national level. This can be achieved by using the formula below:

$$\frac{\text{Standard deviation for schools in a province}}{\text{Standard deviation for schools in the nation}} \times 100$$

The standard deviation of an indicator for a particular province measures the amount of variation among schools within that province, whereas the standard deviation for the whole country measures the amount of variation among schools for the nation. The ratio of the standard deviation of an indicator for a province to the standard deviation for the nation, expressed as a percentage, provides a measure of the degree of equity within a province compared with the national picture.

To illustrate the interpretation of these ratio values it is helpful to consider two hypothetical regions: Province A and Province B. Assume that the levels of a resource are measured by an indicator that has a ratio value of 50 percent for Province A and 150 percent for Province B. That is, the variation in resource levels among schools in Province A is 50 percent less than the variation in resource levels among schools for the whole nation; and the variation in Province B is 50 percent higher than for the nation. From these values it can be said that, compared with the national picture, there has been an equitable allocation among schools within Province A. In contrast, the Ministry should be concerned about Province B because there is clear evidence of major inequities among schools in this region when compared with differences among schools for the whole country.

Equity calculations for material resource inputs

The values of rho in the final column of *Table 5.1* were very small for the classroom supplies index, classroom library, classroom space per pupil, and teacher housing quality. These values indicated that there was very little variation among provinces for these four 'material resources' in schools. It is important to note that this conclusion needs to be interpreted with the actual levels of material provision available in schools. The issue of levels was explored in *Chapter 3*.

A moderate level of variation among provinces was evident for the class furniture index and the pupils-per-toilet ratio, where the rho values (times 100) were 23.9 and 22.6, respectively. The values for each province for the classroom furniture index have been presented in *Table 3.5* – where it may be seen that Nairobi had almost twice the level of resources compared with most other provinces in Kenya.

The values for each province for the pupils-per-toilet ratio have been presented in *Table 3.13*. These values varied by a factor of around 3 from the lowest value of 30.5 in Central to the highest value of 91.7 in North Eastern. Given the health implications of insufficient toilet provision in certain provinces, this is certainly a matter of public concern and requires urgent attention from all concerned.

The most striking figure in *Table 5.1* is the value of 49.6 for the School Resources Index. This figure indicated *major* variations among provinces with respect to the general resourcing of schools as listed in *Table 3.14*. This extremely high figure suggests *major provincial inequities* across the Kenyan School System and should be made an area of priority action. The very high level of inequity in this domain suggests that nothing short of a change of overall policy on allocation of resources to ensure that poor schools are adequately resourced, will be required.

Policy Suggestion 5.1: The Ministry should undertake an immediate review of the inequitable allocation of classroom furniture, toilets, and school resources across provinces in Kenya with a view to introducing a policy of 'positive discrimination' in favour of poorly resourced provinces.

Policy Suggestion 5.2: The cost-sharing policy, which requires parents to meet the cost of physical facilities and infrastructure, needs to be reviewed with a view to having the government provide such facilities, especially in areas where parents are very poor.

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Table 5.1. Equity of material resource distribution to schools as assessed by (a) Variation among schools within provinces, and (b) Variation among provinces

Material resources	Variation among schools within provinces								Variation among provinces (rho x 100)
	1	2	3	4	5	6	7	8	
Class furniture index	119.6	106.3	69.1	68.7	103.1	71.2	69.8	81.2	23.9
Class supplies index	97.5	102.1	88.0	72.6	101.7	99.4	116.3	87.9	7.9
Toilets per pupil	107.4	27.0	78.6	66.9	71.9	95.4	74.5	172.0	22.6
Classroom library	66.2	106.7	98.4	91.2	105.1	102.4	109.4	108.2	1.7
Classroom space per pupil	202.3	50.4	68.1	98.7	40.3	145.1	30.3	33.3	2.5
Teacher housing quality	105.2	97.8	102.3	78.1	102.1	103.6	105.9	97.6	0.0
School resources index	66.9	88.7	62.5	82.6	85.3	67.3	72.9	36.7	49.6

Note: 1 = Coast, 2 = Central, 3 = Eastern, 4 = Nairobi, 5 = Rift Valley, 6 = Western, 7 = Nyanza, 8 = North Eastern.

Table 5.2. Equity of human resource distribution to schools as assessed by (a) Variation among schools within provinces, and (b) Variation among provinces

Human resources	Variation among schools within provinces								Variation among provinces (rho ×100)
	1	2	3	4	5	6	7	8	
Teacher prof. qualif.	108.9	65.2	83.7	142.5	59.7	119.2	107.5	124.2	0.0
Teacher acad. qualif.	92.5	88.0	99.6	89.6	99.2	128.6	100.5	86.8	2.5
Teacher experience	91.8	94.9	109.1	66.1	78.5	112.7	95.0	56.5	15.3
School head acad. qualif.	66.8	88.4	87.2	156.4	95.4	100.2	106.6	89.9	0.0
School head prof. qualif.	83.9	42.7	85.1	145.4	95.2	104.5	130.9	88.4	3.0
School head experience	106.8	51.9	105.0	117.1	94.9	123.9	102.5	62.7	3.0
Inspectors' visits	104.3	89.9	114.7	56.1	82.6	85.8	142.1	93.1	0.0
Pupil/teacher ratio	83.6	72.7	111.2	89.1	111.1	103.2	91.9	111.6	3.3

Note: 1 = Coast, 2 = Central, 3 = Eastern, 4 = Nairobi, 5 = Rift Valley, 6 = Western, 7 = Nyanza, 8 = North Eastern.

The first eight columns of figures in *Table 5.1* showed the standard deviation among schools within each region expressed as a percentage of the standard deviation among schools at the national level. For example, the value of 119.6 percent for the Coast Province on the index of classroom furniture showed that the variation among schools within the Coast Province on this index was around 20 percent more than the variation among schools for the nation as a whole. In contrast, the value of 69.1 percent for the same index in Eastern Province showed that the opposite situation applied – with the variation being around 30 percent less within Eastern than that for the national picture.

The most extreme variations among schools within provinces (using a cut-off of 120 percent) were found for the following provinces and human resource inputs. Coast Province for class furniture index and classroom space per pupil; Western Province for classroom space per pupil; and North Eastern Province for toilets per pupil. Clearly, the Ministry needs to investigate these results and to establish mechanisms for addressing the related inequalities among schools in the Coast, Western, and North Eastern Provinces.

Policy Suggestion 5.3: The Ministry should investigate why the allocation of certain material resources among schools in Coast, Western, and North Eastern Provinces is so unequal.

Equity calculations for human resource inputs

In *Table 5.2*, the results have been presented for the assessment of equity in human resource inputs (a) among schools within provinces, and (b) among provinces. In the final column of figures in *Table 5.2* values of rho (multiplied by 100) have been listed. These figures provided a measure of the variation among provinces. The values of rho were generally quite low, which indicated satisfactory levels of equity among regions. However, the value of 15.3 suggested that some attention should be given to a more equitable distribution among provinces for teacher experience. The issue of teacher distribution by experience is a tricky one. Teachers prefer to be posted in their home area, taking into account such advantages as living in their own house (as opposed to renting a house with the meagre housing allowance that is provided). There may therefore be a limit to which teacher distribution by experience can be effected.

The figures in the first eight columns of *Table 5.2* described the variation among schools within the regions. The most extreme variations among schools within provinces were found for the following provinces and material resource inputs. Nairobi (Teacher professional qualifications, School head academic and professional qualifications); Western (Teacher academic qualifications, School head experience); Nyanza (School head professional qualifications, Inspectors' visits); and North Eastern (Teacher professional qualifications).

Clearly the Ministry should undertake a more detailed investigation of these results for the specific provinces that have been mentioned above. This review could commence with a more detailed examination of the data that were gathered for individual schools in these provinces and perhaps could also include interview input from Provincial offices of the Ministry.

Policy Suggestion 5.4: The Ministry should undertake a detailed examination of instances of unequal allocation of human resources among schools with respect to the Nairobi, Western, Nyanza, and North Eastern Provinces.

It is important to remember that when material inputs to schools have reached a satisfactory level and equity among districts has been achieved, then it is the human resources that begin to play a role in influencing pupil learning and achievement. The reallocation of human resources is much more difficult than dealing with material resources – which tend to be a matter of money. For example, it is not easy to persuade teachers with better qualifications to go to disadvantaged areas and distant schools. The same is true for trying to move school heads with more experience. In the Kenyan situation, however, a lot of emphasis in terms of government funding has gone into training teachers and paying teachers salaries and other remuneration. This has taken up a great proportion of government recurrent expenditure to education and schools have almost been left to devise ways and means of procuring the necessary equipment and teaching/learning resources.

Conclusion

This chapter has explored the concept of equity of resource allocation for groups of material resources and human resources. This investigation was undertaken along two main dimensions (variation among provinces and variation among schools within the provinces). The general picture that emerged for the among-provinces dimension of variation showed that the Ministry had achieved a reasonably equitable situation across provinces for a range of human resource inputs. In contrast, major among-province inequities were more for several material resource inputs, particularly for the items that make up the School Resources Index. This is a serious state of affairs since there are certain basic provisions that are needed if schools are to be able to function. Hence the more equitable allocation of material resources to provinces is an issue that should have high priority in the immediate future.

The analyses also revealed inequities for certain material provision within several provinces (Coast, Western, and North Eastern), and inequities for certain human resource provision within several provinces (Nairobi, Western, Nyanza, and North Eastern). The policy suggestions related to these sources of inequity were concerned with the Ministry conducting further analyses of the data on a region-by-region basis.

Chapter 6

What is the level of reading literacy for Standard 6 pupils overall and in the three domains of reading literacy?

Introduction

This chapter seeks to answer the following question: 'What is the level of reading for Standard 6 pupils overall and in the three domains of reading literacy?' The question was addressed by initially presenting a brief explanation of the structure and content of the test that was used to assess the reading performance of Standard 6 pupils in Kenya. This is followed by a description of how the reading specialists of the Ministry of Education and Human Resource Development identified cut-off scores in the test which corresponded to 'minimum' and 'desirable' levels of reading achievement. The results for the percentages of pupils achieving minimum and desirable levels of mastery are then presented. The chapter concludes with an examination of pupil performance in three key domains of reading literacy: narrative, expository and documents.

The structure of the reading test

The reading test was constructed as a team research project by the SACMEQ National Research Co-ordinators from seven countries. This test was designed to provide a valid measure of basic literacy skills for Standard 6 pupils – not only in Kenya, but also in the other countries participating in SACMEQ's initial project. The test items were constructed so as to conform to the reading syllabi for Standard 6 across the different countries. Reading specialists also reviewed the items in order to eliminate those that were unsuitable due to content, language, and cultural bias. The items were trial-tested and the final test of 59 items was assembled after a comprehensive analysis of:

(a) the psychometric characteristics of the test items, and

(b) the balance of the test across the main reading content and reading skill areas.

The 59 items covered the three main domains of reading as described in *Chapter 2*: narrative (21 items), expository (23 items), and documents (15 items). In *Table 6.1*, the structure of the reading test has been summarized. In the first column the names of the topics used for the passages in the reading test have been listed. In the next three columns the passage has been allocated to one of the three domains of reading. In the final two columns the total number of questions for each topic, and the number of questions that were nominated as being 'essential' according to the procedures outlined below, have been given. For example, the topic of the first passage in the test was a story about a little boy called Tembo. This was a narrative passage, which was linked to a total of five questions, of which four were considered to be essential.

Table 6.1. The structure of the reading test (topics, dimensions, total questions, and essential questions)

Reading test topics	Dimension			Total questions	Essential questions
	N	E	D		
Tembo	✓			5	4
Bird	✓			5	3
Island			✓	4	4
Joseph	✓			5	4
Oranges		✓		4	2
Maria			✓	3	3
Quicksand		✓		3	3
Empty bottles			✓	4	3
Carrots		✓		5	3
Temperature			✓	4	3
Maize		✓		6	4
Grandpa	✓			6	5
Tree		✓		5	3
				59	**44**

Note: N = narrative, E = expository, and D = documents.

The construction of six reading test scores

a) The total score on the 44 essential items

The first score that was constructed was a total test score on the 44 essential items. Pupils were given a score of '1' for each correct item and '0' for each incorrect item – the total score was then calculated as the sum of these values.

b) Two mastery scores based on standards set by the Ministry's reading specialists and Standard 6 reading teachers

Two 'mastery' scores were constructed from a subset of 44 'essential' items selected from the 59 test items that had been completed by all Grade 6 pupils. The subset of the 44 essential items was selected by a panel comprising a group of four experienced Standard 6 teachers, five of the Ministry's reading specialists (from the Curriculum Development Unit of the Kenya Institute of Education), and the SACMEQ National Research Co-ordinator. The panel was assigned the task of reading through the passages in the pupils test and the accompanying test items with a view to identifying those items which they deemed to be important for Standard 6 pupils in Kenya to master if they were to commence a successful year of study at Standard 7 level.

The panel then agreed on what would be a 'minimum' level and a 'desirable' level of performance on these 44 essential test items. To achieve the minimum level of performance a pupil was required to obtain correct answers for 22 of the 44 items. To achieve the desirable level of performance a pupil was expected to obtain correct answers for 31 of the 44 items. Thus these two results represented dichotomous designations of mastery at two levels of performance.

It is extremely important to note here that all of this work was completed *before* the data had been collected and processed. That is, the minimum and desirable performance standards were based on the professional knowledge and experience of Kenya reading specialists – and not on (the commonly used but somewhat arbitrary approach of) selecting cut-off points after an inspection of the distribution of reading scores.

c) Three sub-scale scores based on three sub-dimensions of reading

A further three test scores were based on the three sub-dimensions described above. That is, the total pool of 59 items was split into three subsets: Narrative (21 items), Expository (23 items), and Documents (15 items), and pupil scores were calculated for each subset.

Analysis of mastery levels

The mean scores for the 44 essential test items and their sampling errors have been presented for each province and Kenya overall in *Table 6.2*. This has been followed by the percentages of pupils reaching the minimum and desirable levels of mastery in reading.

The mean score on the essential items of the reading test for Kenya was 24.8 out of a maximum possible score of 44. This mean score needs to be interpreted bearing the following two facts in mind:

(a) every effort had been made during test construction procedures to design the test to suit the skills of the average Standard 6 pupils, and

(b) the 44 essential items had been selected by Kenyan reading specialists because of their relevance with respect to further study at Standard 7 level.

Nairobi had by far the highest mean score of 31.6, and scores for the other seven provinces ranged from 26.8 in the Rift Valley down to the lowest mean scores of 21.0 and 21.4 in Nyanza and North Eastern Provinces, respectively.

The information presented in *Table 6.2* concerning minimum and desirable levels of mastery provided an opportunity to generalize to the population of all Standard 6 pupils with respect to the performance standards set down by the Ministry's own reading experts. To illustrate, consider the two figures of 64.8 percent and 23.4 percent in *Table 6.2* for the overall percentage of Kenyan pupils reaching minimum and desirable levels of mastery.

Table 6.2. Mean performance on 44 essential items and percentages of pupils reaching minimum and desirable levels of mastery

Province	Performance on 44 essential items		Percentage reaching minimum level of mastery		Percentage reaching desirable level of mastery	
	Mean	SE	%	SE	%	SE
Coast	25.7	1.16	69.4	5.57	29.4	5.75
Central	26.3	0.52	79.2	3.70	23.4	3.29
Eastern	25.1	1.26	64.8	6.81	25.5	6.23
Nairobi	31.6	1.18	86.2	2.77	59.6	6.38
Rift Valley	26.8	1.11	73.5	5.05	30.9	6.14
Western	22.9	1.17	56.1	6.48	18.1	4.13
Nyanza	21.0	0.87	43.0	5.55	8.4	2.24
North Eastern	21.4	1.45	46.2	7.98	16.5	4.97
Kenya	**24.8**	**0.44**	**64.8**	**2.35**	**23.4**	**2.10**

Using these overall figures and their associated standard errors, it was possible to make the following statements about the reading performance of the total population of Standard 6 pupils in Kenya.

(a) The percentage of the total population of Standard 6 pupils in Kenya that reached the minimum level of mastery of the reading test was (with 95 percent confidence) located between 64.8 ± 2 (2.35) percent. That is between 60.1 percent and 69.5 percent.

(b) The percentage of the total population of Standard 6 pupils in Kenya that reached the desirable level of mastery on the reading test was (with 95 percent confidence) located between 23.4 ± 2 (2.10) percent. That is between 19.2 percent and 27. 6 percent.

These figures may be looked at in another way by subtracting the percentages from 100 percent in order to calculate the percentages of pupils who have *not* reached the minimum or desirable mastery levels. It can be stated that about 35 percent of pupils did *not* reach the designated minimum mastery level of reading and about 77 percent did *not* reach the desirable level of reading.

These results presented a somewhat gloomy picture concerning the reading performance of Standard 6 pupils in Kenya. By converting the percentages into 'counts' it was possible to obtain a numerical picture of the problems facing the Kenyan primary education system. To illustrate, since we know that in 1998 there were 642,337 Standard 6 pupils in the target population in Kenya, then we can state that about 226,000 pupils had *not* reached the minimum level of mastery in reading. Further, about 492,000 pupils had *not* reached the desirable level of mastery in reading.

These figures indicate the need for a major Ministry review of policy related to the development of literacy skills in Kenyan primary schools. It is not acceptable that only around two-thirds of Standard 6 pupils reach the minimum level of literacy, and only around one quarter reach desirable level.

Many reasons could be advanced to explain why the performance of Standard 6 pupils was so poor. For example, perhaps there were problems with the teaching skills of the teachers, or perhaps there had been difficulties in providing the basic inputs to education, or perhaps much of the explanation was linked to the home characteristics of the pupils?

Policy Suggestion 6.1: The Inspectorate should undertake a major investigation into why the reading skills of Standard 6 pupils in Kenya are so poor in comparison with the 'minimum' and 'desirable' performance standards set down by the Kenya reading specialists.

The generally disappointing overall performance of Standard 6 pupils was not replicated in the same manner for each province. Reasonably good performances came from pupils in Nairobi, with 86.2 percent of the pupils reaching the minimum mastery level and 59.6 percent reaching desirable level. There was a gap between Nairobi and the second-best province, the Rift Valley, where 73.5 percent of pupils reached the minimum level and 30.9 percent reached the desirable level.

The general pattern of results presented in *Table 6.2* showed four distinct performance clusters. At the upper extreme came Nairobi, next there were four provinces with similar percentages reaching minimum and desirable levels (Coast, Central, Eastern, and Rift Valley), then another two provinces (Western and North Eastern), and at the very bottom was Nyanza.

From the results reported above, it can be concluded that the overall reading-literacy levels of Standard 6 pupils in Kenya in 1998 were poor when judged against the mastery standards set down by the Ministry's own experts. Within this overall performance, moderate levels of success were evident in Nairobi and extremely poor levels of success emerged for Nyanza.

Another issue that needs to be addressed by the Ministry is to establish exactly 'where' the pupils had problems on the 59-item SACMEQ reading test and, in particular, on the 44 items classified as 'essential' by the Ministry experts. This will require the Curriculum Development Unit to examine the item analysis statistics and to sort the items into three broad groups: (a) those where the pupils had 'no problems', (b) those items that the pupils found 'rather difficult', and (c) those items that the students found 'very difficult'. A second analysis is then required of the precise reading skills that are required to address the second two problem areas. This analysis should provide clues as to which areas of the reading curriculum are being poorly addressed by the existing teaching programme, and also lead to some suggestions concerning whether solutions to these problems are to be found in improving the teaching materials, the teaching approaches, or perhaps both.

Policy Suggestion 6.2: The Curriculum Development Unit should be asked to examine pupil performance on each of the 59 items of the reading test in order to identify those aspects of the teaching of reading that need to be reviewed and/or improved.

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Analysis of mastery levels for sub-groups

In *Table 6.3* the results for the minimum and desirable levels of mastery for certain sub-groups of pupils have been presented. The first sub-groups to be examined were boys and girls. The second were socio-economic groups (based on a measure of the number of possessions in pupils' homes), and finally sub-groups defined by school location were considered.

A slightly higher percentage of girls, 65.5 percent, than boys, 64.0 percent, reached the minimum mastery level, and this small difference was reversed for the desirable level. However, given the magnitude of the standard errors of sampling of the percentages, the differences between the percentages of boys and girls reaching each of the mastery levels were not significant.

A list of 'possessions in the home', as described in *Chapter 3*, was used as a surrogate measure of the socio-economic circumstances of the homes from which the pupils came. Each pupil was given a score from 0 to 14 depending upon the number of possessions located in his or her home. A 'very low' socio-economic level was defined for those pupils coming from homes having zero to three possessions; the 'low' level as four possessions; the 'moderately low' level as five possessions; the 'moderately high' level as six possessions; the 'high' level as seven to eight possessions; and the 'very high' level as nine to fourteen possessions. It may be seen from the final column of *Table 6.3* that this classification divided the total sample of 3,223 pupils into six groups ranging in size from around 300 to 800 pupils.

There were around 60 percent of children in the 'very low' socio-economic group who reached minimum mastery and very few of them, around 20 percent, reached the desirable level. As expected, there was a general tendency for the percentages of children reaching both the minimum and desirable mastery levels to rise as socio-economic levels ascended.

A feature of this table was that the percentage of pupils reaching minimum mastery was about 15 percent higher for the 'very high' socio-economic level than it was for the 'very low' socio-economic level. For the desirable mastery results, around twice as many from the high socio-economic group reached the desirable level.

The third set of figures presented in *Table 6.3* showed that there were major differences in reading performance when the pupils were classified according to whether a school was located in an isolated rural area, a rural area, a small town, or a city. Major differences were observed as the school-location categories changed, with higher reading performances being noted in moving to more urbanized classifications. Care needs to be taken in interpreting this trend because of the possibility of confusion associated with differences in socio-economic levels among the different school locations.

Table 6.3. Percentages of pupils reaching minimum and desirable mastery levels for sub-groups of pupils

Sub-groups	Minimum mastery level		Desirable mastery level		Sample size
	%	SE	%	SE	
Gender					
Boys	64.0	2.74	24.2	2.41	1698
Girls	65.5	2.48	22.6	2.27	1535
Socio-economic level					
Very low (0-3)	59.8	3.89	21.6	3.20	797
Low (4)	59.8	3.81	18.1	2.85	462
Moderately low (5)	61.9	3.86	18.9	2.72	526
Moderately high (6)	71.9	2.76	21.3	2.82	491
High (7-8)	67.1	3.95	29.5	3.93	530
Very high (9-14)	75.4	4.17	40.2	6.09	427
School location					
Isolated	51.2	15.00	13.5	6.98	129
Rural	59.6	3.13	17.1	2.25	1692
Small town	71.6	4.91	28.9	4.93	739
Large city	86.2	2.38	53.3	6.09	673
Kenya	**64.8**	**2.35**	**23.4**	**2.10**	**3233**

Analysis of narrative, expository, and document sub-scales

It has already been mentioned above that three sub-scales made up the literacy test: Narrative (21 items); Expository (23 items); and Documents (15 items). In *Table 6.4,* the mean scores and sampling errors of each of the three dimensions of reading have been presented.

Each sub-scale had different numbers of items and therefore a summary overall comparative picture was obtained at the national level by converting the average scores into percentages. The overall situation for Kenya was as follows. In the Narrative sub-scale 51.9 percent (10.9 out of 21 items) of responses were correct, in the Expository sub-scale 52.6 percent (12.1 out of 23 items) of responses were correct, and in the Document sub-scale 56.0 percent (8.4 out of 15 items) of responses were correct.

Table 6.4. The means and sampling errors of pupils on the three dimensions of reading achievement

Province	Narrative (21 items)		Expository (23 items)		Documents (15 items)	
	Mean	SE	Mean	SE	Mean	SE
Coast	11.3	0.60	12.7	0.55	8.6	0.43
Central	11.3	0.30	12.8	0.26	9.3	0.19
Eastern	10.9	0.56	11.9	0.63	8.7	0.44
Nairobi	15.1	0.64	15.1	0.59	10.6	0.42
Rift Valley	11.8	0.58	13.3	0.59	9.0	0.36
Western	10.2	0.63	11.4	0.55	7.5	0.35
Nyanza	9.3	0.39	10.3	0.49	7.0	0.26
North Eastern	10.4	0.58	9.9	0.67	7.3	0.48
Kenya	**10.9**	**0.21**	**12.1**	**0.22**	**8.4**	**0.15**

The general pattern of achievement of the sub-scales described in *Table 6.4* followed a similar pattern to the results on mastery levels presented in *Table 6.2*. Standard 6 pupils in Nairobi clearly fared best, and Nyanza clearly fared worst, with other provinces between these extremes. In *Table 6.5*, the narrative, expository and document scores have been presented for the sub-groups listed in *Tables 6.3 and 6.4*. For the sub-scales, the same pattern of results emerged as was evident from the analysis of minimum and desirable mastery levels.

The performances of boys and girls across the three domains were equivalent – which was supported by almost equal performances for the overall test score.

There was a positive correlation between the socio-economic status and the levels of achievement: as the socio-economic status increased, the mean scores also tended to increase. This is an indication that families of higher socio-economic status have the ability to provide their children with the facilities and materials necessary for improved performance.

A systematic trend was also noted concerning school location – with pupils in urban settings obtaining higher scores on all three dimensions.

Table 6.5. Means and sampling errors of different sub-groups of pupils

Sub-groups	Narrative		Expository		Documents	
	Mean	SE	Mean	SE	Mean	SE
Gender						
Boys	10.9	0.24	12.1	0.27	8.6	0.18
Girls	10.9	0.24	12.1	0.23	8.2	0.14
Socio-economic level						
Very low (0-3)	10.3	0.33	11.8	0.35	8.0	0.22
Low (4)	10.3	0.30	11.6	0.36	8.0	0.24
Moderately low (5)	10.4	0.27	11.6	0.30	8.2	0.21
Moderately high (6)	11.1	0.26	12.3	0.31	8.7	0.18
High (7-8)	11.7	0.42	12.6	0.45	8.8	0.30
Very high (9-14)	12.8	0.59	13.9	0.51	9.3	0.36
School location						
Isolated	9.3	1.43	10.7	1.19	7.5	0.78
Rural	10.2	0.23	11.6	0.28	8.0	0.18
Small town	11.5	0.49	12.7	0.44	8.8	0.32
Large city	14.4	0.47	15.0	0.62	10.3	0.41
Kenya	**10.9**	**0.21**	**12.1**	**0.22**	**8.4**	**0.15**

Conclusion

In the above discussion of results, the reading performances of various sub-groups of pupils were examined. A critical question in such an examination is to consider to what extent the patterns of differences among the sub-groups are stable or changing over time. For example: is the similar reading literacy performance of boys over girls with respect to minimum and desirable reading levels consistent – or will this situation change with time? Will improved economic conditions in Kenya result in a reduction of performance disparities among socio-economic groups and among various school locations? These are very important questions as Kenya seeks to develop as a stable and economically successful nation in the new millennium.

In order to have access to the information required to answer these kinds of important questions about the quality of education in Kenya, it will be necessary for the Ministry to begin planning now for the establishment of a strong and comprehensive database related to literacy levels in primary schools.

Policy Suggestion 6.3: The Ministry should design and implement a continuous system for monitoring literacy levels in primary schools, which should feature a detailed analysis of sub-groups of students broken down by variables such as province, gender, socio-economic level, and school location.

This chapter has undertaken a detailed examination of the reading-literacy levels of Standard 6 pupils in Kenya. Two key points concerning this examination need to be restated: (a) the test that was used to assess Standard 6 literacy levels was prepared in a scientific manner so as to ensure its validity for this purpose, and (b) the 'minimum' and 'desirable' performance levels were specified by Kenyan reading specialists *before the data were collected and analyzed*.

These two key points, when taken in combination with the overall unsatisfactory performance of the pupils in Kenya (in relation to minimum and desirable levels of performance) and the poor performance of certain sub-groups of pupils, suggest that the time has come for a searching review of the quality of the reading curriculum and the quality of teachers and their teaching methods. Several starting points have already been put forward as policy suggestions in this chapter. However, the magnitude of the challenge suggests that an effective solution in this area may require the Ministry to undertake further research in order to identify appropriate solutions, and then to allocate sufficient resources to develop strategies for implementing those solutions. It is only through such strategies that Kenya will be able to realize its goal of quality and equity in educational development.

Chapter 7

An Agenda for Action

Introduction

This report provides an illustration of how the analysis of educational research data can be used to reflect upon important national educational policies. The educational research data that were analyzed for the report focused on providing policy suggestions aimed at improving the operations of the primary education system in Kenya. The report is therefore offered to the reader as a research-based agenda for constructive discussion of educational policy options.

It has been seen that the conditions of schooling at Standard 6 level in Kenya are far from ideal. It would not be an exaggeration to say that there is a crisis in the primary education system. There are problems with school buildings in that many are seen to be in need of major repair; there is a lack of classroom furniture and supplies; most classrooms do not have a classroom library and many of the schools do not have a school library.

There would appear to be a lack of national policy for several key factors to do with education. Indeed, there was a lack of agreed benchmarks in the Ministry itself for various aspects of school conditions. There were serious disparities in certain resource allocations among and within provinces and this appears to have gone unnoticed.

The findings of the study indicate that there needs to be a re-awakening within the Ministry of Education, Science and Technology – starting at the national level and moving all the way down to the schools and communities. Some educational facilities can be provided by the Ministry, but co-operation among all partners involved in the educational process is necessary if the quality of education is to be improved. It is not sufficient for parents to pay something towards education. They must also be part of it, make inputs to the operation of schools, demand curriculum content that is relevant for their children, and be part of ensuring the establishment and maintenance of high standards of education. The school should be the focal point for the community.

The suggestions made in this report will demand a high level of co-operation between the communities and the Ministry as represented by its provincial and district officers. These persons must have the determination to make things happen. In particular, the Ministry must ensure, through systematic planning, that the standards of school conditions and the quality of education are improved and maintained. An enormous effort will be needed to make the required changes.

The policy suggestions presented in earlier chapters have been written in a provocative style with the aim of generating widespread debate. It is hoped that officials and decision-makers within the Ministry will join this debate and then take steps to prepare a realistic plan of action – bearing in mind that at the beginning something akin to a national campaign for educational reform will be needed. It is not appropriate to assume that aid agencies will provide 'simple solutions via the chequebook'. Kenya must be self-reliant and the government must persuade parents to do much more in support of their children's education than has been achieved up to this point in time. It is for these reasons that many of the policy suggestions will require action by communities, in collaboration with the Ministry, although there are also many steps suggested that the Ministry itself should undertake.

It is important to mention here that the report of the Education Review Commission (Koech Report) was released for public debate in April 2000, and proposes a complete transformation and overhaul of the education system in Kenya. Careful implementation of this report would tackle many of the issues raised in the Koech Report, and thereby lead to major improvements in quality. These improvements are required in order for Kenyan children to have access to an educational programme that is relevant to the diverse needs of their communities.

Classification of policy suggestions

There were a total of 40 policy suggestions made in *Chapters 3* to *6*. These suggestions were prepared on the basis of a careful interpretation of the results of the data analyses, and with the added benefit of consultations with decision-makers at different levels of the Kenyan education system. It would not have been helpful for the Ministry to receive these policy suggestions as a simple list. This approach would not have recognized the different nature of many of the suggestions and would have ignored differences in time and costs related to their implementation. Instead, it was decided to undertake a systematic classification of the suggestions according to their operational implications for the Ministry. It was considered that this form of classification would facilitate a more coherent debate concerning the prioritization of the suggestions and the subsequent selection of realistic avenues of action. Five main groups of policy suggestions emerged from this analysis. The following discussion lists the suggestions according to group membership, provides a short statement of the operational implications associated with each group, and gives three examples of actions required.

Group 1: Consultations with staff, community, and experts. This group contained four suggestions (3.5, 3.18, 4.1, 4.5) that required a variety of consultations and discussions with a range of stakeholders. For example, consultations with provincial offices concerning female student participation rates, meetings with teacher educators to discuss pre- and in-service courses, discussions with experts and administrators about benchmark standards, etc.

Group 2: Reviews of existing planning and policy procedures. This group contained 12 suggestions (3.2, 3.8, 3.11, 3.13, 3.14, 3.15, 3.23, 4.2, 4.4, 4.8, 4.10, 5.1) and these were focussed on the need to revisit and reform existing regulations and practices. For example, reviews of policy on age for school entry, re-examination of homework guidelines, and changes in staffing arrangements to achieve a better gender balance.

Group 3: Data collection for planning purposes. This group consisted of 13 suggestions (3.1, 3.4, 3.9, 3.16, 3.17, 3.19, 3.20, 3.21, 4.3, 4.6, 4.7, 5.3, 5.4) and these identified information gaps that could only be addressed with suitable supplementary data collections. For example, data collections concerning absenteeism and the availability of teaching materials, a census of the condition of school buildings, and studies of overcrowding in classrooms.

Group 4: Educational policy research projects. This group contained six suggestions (3.10, 3.12, 4.9, 6.1, 6.2, 6.3) that identified specific educational policy research projects. For example, special studies of extra tuition and grade repetition, an evaluation of the depth and breadth of the curriculum, and detailed studies of student reading-literacy levels.

Group 5: Investment in infrastructure and human resources. This group contained five suggestions (3.3, 3.6, 3.7, 3.22, 5.2) and all of these dealt with large-scale national programmes that would require substantial outside funding and a great deal of time to implement. For example, strengthening out-of-school programmes for over-age children and adults, the development of a mobile library system, and financial assistance for poor parents.

In *Table 7.1*, the 40 policy suggestions have been grouped into the five categories described above. Each suggestion was linked to the relevant department within the Ministry that would be responsible for its implementation. In addition, broad estimates for implementation time and costs were included for each suggestion.

A four-stage Agenda for Action by the Ministry

Given the economic conditions prevailing in Kenya when this report was prepared, it was clearly unrealistic to expect the Ministry of Education, Science and Technology to make an immediate start on action to address all 40 policy suggestions listed in *Table 7.1*. In fact, even if funding were available to address all the suggestions, the logistical problems for any Ministry in the world that tried to act immediately and effectively on all suggestions would be insurmountable.

It was therefore essential to make some attempt to list the suggestions in priority order. Such a listing would provide a starting point for the Ministry to co-ordinate a constructive debate as to which tasks to tackle immediately, and which tasks to leave until resource levels and logistical conditions were appropriate to address them effectively.

After consultations with the staff of the Ministry, it was decided that the 'Time' and 'Cost' factors should be the predominant influences on the creation of a priority list of policy suggestions. These two factors described in the final columns of the table, were generated by making only rough estimates of the resources required for each suggestion and therefore should be subjected to further examination by the Ministry.

The time estimates took one of three values: 'short' – for around three to nine months; 'medium' for around one to two years; and 'long' for three to five years. The cost estimates also took one of three values: 'low cost' – for initiatives that required no increased expenditure and could be accommodated within existing budgets through redeployment of staff, more efficient use of resources, and/or refining data collection procedures that were already in place; 'moderate cost' – for activities that required data collection and/or research projects that could not be built into existing arrangements, and would therefore need to be funded in addition to current Ministry operations; and 'high cost' – for large-scale investments in capital works and human resources

84

An examination of the final two columns of *Table 7.1* shows two important patterns. First, for most of the suggestions, short time-frames tended to be linked to low costs, medium time-frames tended to be linked to either low or moderate costs, and long-term frames were mostly linked to high costs.

With this information in mind, the following four-stage priority listing of the suggestions was prepared. The first stage lists the suggestions that could be addressed immediately by the Ministry. The second stage is recommended for action after the first stage is well under way. The third stage requires further information to be used as input before a reconsideration of priorities and the selection of a manageable subset of suggestions. The final stage requires no large-scale action by the Ministry until a 'partnership' can be arranged with a suitable donor agency.

Stage 1: For immediate action by the Ministry. The time-frame and cost patterns discussed above showed that the Ministry's first actions, in response to the list of suggestions given in *Table 7.1*, should be concentrated on those that were listed under Group 1 ('consultations') and Group 2 ('reviews'). These suggestions had short to medium time-frames and low to moderate costs. The highest priority should be given to the 10 policy suggestions that had *both* a short time-frame and a low cost.

Stage 2: For second-phase action by the Ministry. Most of the suggestions in Group 3 ('data collection') had medium-time-frames – but their costs ranged from low to moderate. These suggestions should therefore be considered as the focus for a second stage of action to be undertaken when the 'immediate action' designated for *Stage 1* has been completed. With careful planning the costs of a number of these suggestions could be reduced. For example, the data required for many of them could be obtained by expanding the data collection instruments used for the school census.

Stage 3: For further review before action is taken by the Ministry. Four of the six suggestions in Group 4 ('research projects') had medium-term time-frames and moderate costs, and one had a long time-frame with moderate costs. It would not be realistic to expect the Ministry to address all of these suggestions immediately. Instead one or two of the more important of these should be selected for some preliminary planning. Work in this area could be facilitated by seeking advice and resource inputs from other countries and agencies that have already tackled similar research projects.

Stage 4: For action by the Ministry after a 'partnership' has been established. One suggestion listed in Group 3, one in Group 4, and five in Group 5 had long time-frames and mostly high costs. It would be difficult in the current economic climate for the Ministry to obtain government support for taking rapid action on these – unless some of the required resources can be obtained through partnership with a donor agency. The Ministry might begin to address these suggestions on a very small scale by taking action for one or two of them on an 'experimental' basis in one of the smaller education regions in Kenya.

Table 7.1. Summary of policy suggestions in association with the relevant department(s), and the suggested time-frame/costs

Policy suggestion	Relevant department(s)	Time	Cost
Group 1: Consultations with staff, community, and experts			
Policy Suggestion 3.5 The Ministry should consult with the staff of the North Eastern Provincial Education Office in order to plan strategies for ensuring that the percentage of girls enrolled in school in Standard 6 is raised.	North Eastern Provincial Office	Short	Low
Policy Suggestion 3.18 The Ministry should meet with teacher educators to ensure that the importance of teachers meeting with parents is stressed in pre- and in-service training courses. Special attention should be given to this feature in the Coast and Rift Valley Provinces.	Teacher Education Centres, Coast and Rift Valley Provincial Offices	Short	Low
Policy Suggestion 4.1 The Ministry should update and publish comprehensive benchmarks for the educational environment that are deemed to be 'reasonable for the proper functioning of primary schools'.	Planning Division	Short	Low
Policy Suggestion 4.5 The Ministry, in conjunction with the Provincial Educational Office in the North Eastern Province, should consult with the local communities in order to find a remedy for the space problem in schools.	North Eastern Provincial Office	Short	Low
Group 2: Reviews of existing planning and policy procedures			
Policy Suggestion 3.2 The Ministry should introduce more appropriate age limits for enrolment into Standard 1 for children in pastoral areas, where economic and social conditions do not allow them to conform to the norm of six years. As measures are taken to improve the conditions (for example, having schools closer to the pupils) the age limits could be adjusted.	School heads and the Inspectorate	Short	Low
Policy Suggestion 3.8 The government should give greater recognition to the importance of adult education programmes, especially in rural areas, as a means of providing continuing education to parents who have not had such opportunities.	Adult Education Office	Short	Low

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Table 7.1. *(continued)*

Policy suggestion	Relevant department(s)	Time	Cost
Policy Suggestion 3.11 The Ministry should institute an investigation in all provinces except for Nairobi and Central in order to discover why the amount of homework being given is so little. The Ministry should then take steps to ensure that all pupils receive regular homework.	Planning Division	Short	Low
Policy Suggestion 3.13 The Ministry and Provincial Offices of Education should take action to have a more balanced distribution of female and male teachers in primary schools.	Staffing Division and Provincial Offices	Short	Low
Policy Suggestion 3.14 The Teachers Service Commission should attempt to equalize the years of experience of teachers across provinces when allocating new teachers or transferring experienced teachers.	Teachers Service Commission	Short	Low
Policy Suggestion 3.15 It would be desirable for the Ministry to revisit the current policy of in-service training programmes and revise it so that all teachers in all provinces receive regular updating through such programmes.	In-Service Education Branch	Short	Low
Policy Suggestion 3.23 The Ministry, through the Inspectorate and relevant departments, should ensure effective utilization of textbooks and other readers supplied to schools through various projects.	Inspectorate and School heads	Medium	Low
Policy Suggestion 4.2 The Ministry should establish a special unit within the Inspectorate, specifically charged with the responsibility of establishing norms and standards.	Inspectorate	Medium	Low
Policy Suggestion 4.4 The Ministry, in areas where enrolments are low and class sizes are very small (for example, 10 or less), should consider introducing multigrade teaching, and support this by training teachers in this mode of delivery.	Inspectorate, School heads and Teachers College	Medium	Moderate

87

Table 7.1. *(continued)*

Policy suggestion	**Relevant department(s)**	**Time**	**Cost**
Policy Suggestion 4.8 As part of the wider education reform, the Ministry should encourage communities in North Eastern Province to start shift systems in the lower sections of primary schools so as to ease classroom congestion.	North Eastern Provincial Office	Medium	Low
Policy Suggestion 4.10 The Ministry should establish a benchmark on the number of in-service courses that teachers should be given and ensure that such courses are delivered on a regular and equitable basis.	In-Service Education Branch	Medium	Moderate
Policy Suggestion 5.1 The Ministry should undertake an immediate review of the inequitable allocation of classroom furniture, toilets, and school resources across provinces in Kenya with a view to introducing a policy of 'positive discrimination' in favour of poorly resourced provinces.	Buildings and Supplies Divisions	Medium	Moderate
Group 3: Data Collection for planning purposes			
Policy Suggestion 3.1 The Ministry should plan to undertake a follow-up survey of the same target population employed during SACMEQ's first study in order to examine changes in important educational indicators over time.	Planning Division	Medium	Moderate
Policy Suggestion 3.4 The Ministry should analyze available data and undertake any additional research required to establish the causes for gender imbalances in pupil enrolments in upper-primary classes. Proposals for action should be made on the basis of these analyses to reduce early school leaving, especially where one sex leaves school in greater numbers than the other.	Planning Division	Medium	Low
Policy Suggestion 3.9 The Ministry should gather data in order to determine the main causes of learner absenteeism in those districts where it is prevalent, and design measures to curb such absenteeism.	Planning Division and Provincial Offices	Medium	Low

Table 7.1. *(continued)*

Policy suggestion	**Relevant department(s)**	**Time**	**Cost**
Policy Suggestion 3.16 As a matter of urgency, the Ministry should instigate a census of all primary schools in order to ascertain the levels of teaching materials and classroom furniture, and then take steps to ensure that all of these basic supplies are made available to all schools.	Planning Division	Medium	Moderate
Policy Suggestion 3.17 As a matter of urgency, the Ministry should undertake a census of the provision of basic supplies such as readers and other important learning materials that exist in the primary schools. This review should be used to establish a priority list for assisting provinces that are in most need.	Planning Division	Medium	Moderate
Policy Suggestion 3.19 The Ministry should undertake a census of the condition of school buildings and then assess the extent to which a staged programme of re-building and repairs can be carried out.	Planning Division	Medium	Moderate
Policy Suggestion 3.20 The Ministry should, as a matter of urgency, undertake a census of the availability and condition of school toilet facilities, and then use this information to improve these facilities, especially for girls.	Planning Division and Buildings Division	Medium	Moderate
Policy Suggestion 3.21 The Ministry should gather information concerning the availability of school equipment by undertaking a school census and then use this to establish a priority list for supplying schools in greatest need.	Planning Division and Supplies Division	Medium	Moderate
Policy Suggestion 4.3 The Ministry should, through its annual school census, identify classes in schools where there are more than 50 pupils and then take the required measures to ensure that pupils are not in overcrowded classrooms. For example, in schools where many classes are too large the Ministry should encourage the multi-shift system in order to obtain the desired number of pupils per class.	Planning Division	Long	Moderate

Table 7.1. *(continued)*

Policy suggestion	Relevant department(s)	Time	Cost
Policy Suggestion 4.6 The Ministry should undertake a data collection in order to identify schools in North Eastern Province that have the poorest pupil teacher/ratio figures and then apply appropriate intervention measures to assist those schools.	Planning Division	Medium	Moderate
Policy Suggestion 4.7 The Ministry should identify, through its data collection process, schools where Standard 6 pupils do not have their own writing place and then take action to address this need.	Planning Division and Local Communities	Medium	Moderate
Policy Suggestion 5.3 The Ministry should investigate why the allocation of certain material resources among schools in Coast, Western, and North Eastern Provinces is so unequal.	Planning Division and relevant Provincial Offices	Short	Low
Policy Suggestion 5.4 The Ministry should undertake a detailed examination of instances of unequal allocation of human resources among schools with respect to the Nairobi, Western, Nyanza, and North Eastern Provinces.	Planning Division and relevant Provincial Offices	Short	Low
Group 4: Educational policy research projects			
Policy Suggestion 3.10 The Ministry should undertake a special study of extra tuition in order to examine the following questions: Who goes and does not go? Who calls for the extra tuition? What is taught during this extra tuition?	Planning Division	Medium	Moderate
Policy Suggestion 3.12 The Ministry should undertake a detailed investigation into the practice of grade repetition in Kenya in order to determine whether the extra year(s) of schooling being received by some two-thirds of the Standard 6 pupils can be justified on either educational or economic grounds.	Planning Division	Medium	Moderate

Table 7.1. *(continued)*

Policy suggestion	**Relevant department(s)**	**Time**	**Cost**
Policy Suggestion 4.9 The Kenya Institute of Education should undertake a study of the curriculum with a view to making it manageable, in terms of affordability for parents, by reducing the number of subjects while ensuring quality and relevance.	Kenya Institute of Education	Medium	Moderate
Policy Suggestion 6.1 The Inspectorate should undertake a major investigation into why the reading skills of Standard 6 pupils in Kenya are so poor in comparison with the 'minimum' and 'desirable' performance standards set down by the Kenya reading specialists.	Inspectorate	Medium	Moderate
Policy Suggestion 6.2 The Curriculum Development Unit should be asked to examine pupil performance on each of the 59 items of the reading test in order to identify those aspects of the teaching of reading that need to be reviewed and/or improved.	Curriculum Development Unit	Short	Low
Policy Suggestion 6.3 The Ministry should design and implement a continuous system for monitoring literacy levels in primary schools, which should feature a detailed analysis of sub-groups of students broken down by variables such as province, gender, socio-economic level, and school location.	Planning Division	Long	Moderate
Group 5: Investment in infrastructure and human resources			
Policy Suggestion 3.3 The Ministry should strengthen out-of-school programmes as a complementary way of providing education opportunities to those over-age children who have missed the chance to join the formal system at the right age.	Non-Formal Education Unit	Long	High
Policy Suggestion 3.6 Given that the availability of books is essential if children are to improve their reading comprehension, it is incumbent on the educational authorities to ensure that children have access to books either through school or mobile libraries. This help is needed especially in Western and North Eastern Provinces.	Supplies Branch	Long	High

Table 7.1. *(continued)*

Policy suggestion	**Relevant department(s)**	**Time**	**Cost**
Policy Suggestion 3.7 The government should ensure that the school-feeding programme continues once support from the World Food Programme comes to an end, through encouraging sustainability measures such as income-generating activities. These initiatives can be supported by NGOs, religious and community-based organizations.	Government Ministries	Long	High
Policy Suggestion 3.22 There is a disturbing dearth of reading materials in Kenyan primary schools. Given the known relationship between the availability of books and pupil performance, it is incumbent on the Ministry to remedy the situation regarding classroom libraries, school libraries, being able to borrow books, and the existence of sufficient English readers in schools.	Supplies Branch	Long	High
Policy Suggestion 5.2 The cost-sharing policy, which requires parents to meet the cost of physical facilities and infrastructure, needs to be reviewed with a view to having the government provide such facilities, especially in areas where parents are very poor.	Buildings Branch	Long	High

Co-ordination of Ministry responses to the Agenda for Action

The Ministry of Education, Science and Technology's response to the four-stage Agenda for Action described above will demand major inputs by many different groups of people inside and outside the Ministry. This mobilization of effort and resources will require close co-ordination to ensure that (a) decisions taken at the senior level of the Ministry concerning the policy suggestions are implemented, and (b) a mechanism is established to monitor and evaluate the progress and impact of these decisions.

The Planning Section of the Ministry should undertake this co-ordination. Arrangements will need to be made to ensure that Planning Section staff involved in this work are given sufficient time, resources, and support to ensure that important decisions are followed up and to guarantee that the Ministry's senior decision-makers are given constant briefings on progress and achievements.

The future

This educational policy report grew out of a series of IIEP research and training activities that were aimed at improving the capacity of educational planners to monitor the quality of education. The collaborative approach used to produce the report represents a genuine breakthrough for the conduct of educational policy research in Africa. It is indeed extremely rare, in any part of the world, for a group of educational planners from many countries to join forces in this way in order to produce common research instruments, conduct the survey, analyze and interpret the data, and finally produce an educational policy report.

It is envisaged that SACMEQ will establish a programme of activities that will include further analyses of the SACMEQ data archives in order to produce policy papers based on comparisons among the SACMEQ countries.

The member countries of SACMEQ acknowledge the important role of a co-operative approach towards capacity building based on the design, management, and implementation of high-quality educational policy research projects. SACMEQ represents a unique Africa-controlled initiative in this area, and its sustainability will depend upon the commitment of member countries to continue with their efforts to work together, to learn from each other, and to share their experience and expertise.

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94

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EFF-089 (1/2003)